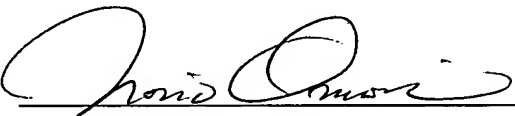




## VERIFICATION OF TRANSLATION

I, Norio Ohmori, registered Patent Attorney, having my business place at Fukuoka Building, 9<sup>th</sup> Floor 8-7, Yaesu 2-Chome, Chuo-ku, Tokyo 104-0028 Japan, do hereby declare that I am conversant in the Japanese and the English language and that I am the translator of the documents attached and certify that to the best of my knowledge and belief the following is a true and correct English translation of the specification contained in the Application No. JP2001-256862.

Signature :   
Norio Ohmori

This 24<sup>th</sup> day of June, 2005

日 本 国 特 許 庁  
JAPAN PATENT OFFICE

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

出 願 年 月 日  
Date of Application: 2 0 0 1 年 8 月 2 7 日

出 願 番 号  
Application Number: 特 願 2 0 0 1 - 2 5 6 8 6 2

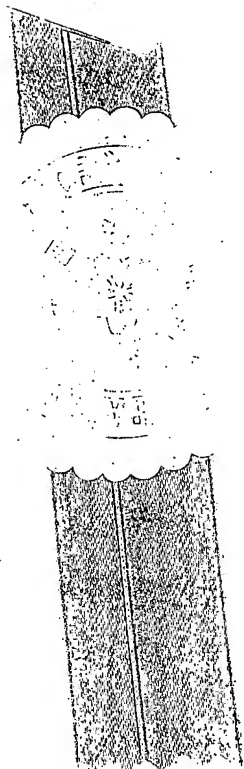
パリ条約による外国への出願  
に用いる優先権の主張の基礎  
となる出願の国コードと出願  
番号

The country code and number  
of your priority application,  
to be used for filing abroad  
under the Paris Convention, is

J P 2 0 0 1 - 2 5 6 8 6 2

出 願 人  
Applicant(s):

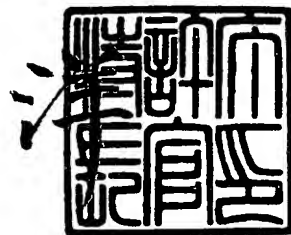
理化学研究所  
中村 祐輔  
関根 章博  
飯田 有俊  
斎藤 督



特許庁長官  
Commissioner,  
Japan Patent Office

2 0 0 5 年 6 月 2 3 日

小 川



出証番号 出証特 2 0 0 5 - 3 0 5 4 2 5 5



	[Document Name]	Patent Application
	[Reference Number]	RJH13-090S
	[Submission Date]	August 27, 2001
	[Addressee]	Commissioner of the Patent Office
5	[International Classification]	G01N 33/00
	[Title of the Invention]	Method of Detecting Gene Polymorphism
	[Number of Claims]	16
	[Inventor]	
	[Residence]	1-17-33, Azamino, Aoba-ku,
10		Yokohama-shi, Kanagawa
	[Name]	Yusuke Nakamura
	[Inventor]	
	[Residence]	1-11-8, Kita, Kunitachi-shi, Tokyo
	[Name]	Akihiro Sekine
15	[Inventor]	
	[Residence]	21, Tajiricho, Nakahara-ku
		Kawasaki-shi, Kanagawa
	[Name]	Aritoshi Iida
	[Inventor]	
20	[Residence]	Kawabe Park Homes 108, 5-10-6, Higashiome
		Ome-shi, Tokyo
	[Name]	Susumu Saito
	[Applicant for patent]	
	[Identification Number]	000006792
25	[Name]	RIKEN
	[Applicant for patent]	
	[Identification Number]	500056758
	[Name]	Yusuke Nakamura
	[Applicant for patent]	
30	[Identification Number]	501002471
	[Name]	Akihiro Sekine
	[Applicant for patent]	
	[Identification Number]	501002482
	[Name]	Aritoshi Iida
35	[Applicant for patent]	

	[Identification Number]	501002493	
	[Name]	Susumu Saito	
	[Attorney]		
	[Identification Number]	100091096	
5	[Patent Attorney]		
	[Name]	Yusuke Hiraki	
	[Appointed Attorney]		
	[Identification Number]	100096183	
	[Patent Attorney]		
10	[Name]	Sadaji Ishii	
	[Claim of Priority based on a Prior Patent Application]		
	[Application Number]	2000-399443	
	[Filing Date]	December 27, 2000	
	[Claim of Priority based on a Prior Patent Application]		
15	[Application Number]	2001-135256	
	[Filing Date]	May 2, 2001	
	[Official Fee]		
	[Prepayment Register Number]	015244	
	[Amount of Payment]	21000	
20	[List of What Is Submitted]		
	[Item]	Specification	1
	[Item]	Drawings	1
	[Item]	Abstract	1
	[General Power of Attorney]	9503618	
25	[Request of poof]	Yes	

[Name of Document] SPECIFICATION

[Title of the Invention] METHOD OF DETECTING GENE POLYMORPHISM

[Scope of Claims]

1. A method for detecting a genetic polymorphism(s), comprising creating  
5 oligonucleotide probes and/or oligonucleotide primers so that the probes and/or primers  
contain a polymorphic site(s) present in a gene encoding a drug metabolizing enzyme or so  
that the polymorphic site(s) is/are contained in the amplified fragment when at least one of  
said gene encoding the drug metabolizing enzyme is amplified; and detecting at least one  
genetic polymorphism in a gene of a subject encoding the drug metabolizing enzyme using  
10 the resultant oligonucleotide probes and/or oligonucleotide primers.

2. The method according to claim 1, wherein the oligonucleotide probe and/or  
oligonucleotide primer containing a gene polymorphic site is created so that the nucleotide  
positioned at its 5' or 3' end or its central part is the polymorphic site.

3. The method according to claim 1, wherein the oligonucleotide probe  
15 containing a gene polymorphic site is composed of two fragments being linked to each other,  
one fragment being hybridizable to the gene encoding a drug metabolizing enzyme and the  
other fragment being not hybridizable thereto, and said polymorphic site is positioned at the  
5' or 3' end of the hybridizable fragment.

4. The method according to claim 1, wherein the oligonucleotide probes and/or  
20 oligonucleotide primers containing a gene polymorphic site comprising an at least 13  
nucleotide sequence within any of the nucleotide sequences as shown in SEQ ID NOS: 1  
through 3360, said at least 13 nucleotide sequence containing the 21<sup>st</sup> nucleotide, or a  
sequence complementary to said at least 13 nucleotide sequence.

5. The method according to any one of claims 1 to 4 wherein the polymorphism  
25 is a single-nucleotide polymorphism, a polymorphism caused by deletion, substitution or  
insertion of a plurality of nucleotides, or a VNTR or microsatellite polymorphism.

6. A method for evaluating a drug, wherein the effectiveness and safety of a drug  
metabolized by the drug metabolizing enzyme are evaluated based on the results obtained by  
the detection method according to any one of claims 1 to 5.

7. A method for screening a drug, wherein the drug to be used is selected based  
30 on the results obtained in the evaluation method according to claim 6.

8. A method for screening a drug, wherein the genetic polymorphism data  
associated with the gene encoding a drug metabolizing enzyme in a control subject is  
compared to the genetic polymorphism data associated with the same gene in a test subject,  
35 and wherein a drug to be used is selected from the results of an analysis of the effectiveness

and/or safety of the drugs metabolized by the drug metabolizing enzyme.

9. The method according to any one of claims 1 to 8 wherein information of the polymorphic site is as shown in Table 1.

10. The method according to any one of claims 1 to 9, wherein the drug metabolizing enzyme is at least one selected from the group consisting of epoxide hydrolase, methyltransferase, N-acetyltransferase, sulfotransferase, quinone oxidoreductase, glutathione S-transferase, UDP-glycosyltransferase, aldehyde dehydrogenase, alcohol dehydrogenase, esterase, NDUF, cytochrome P450 (CYP) and ATP-binding cassette.

11. An oligonucleotide selected from the group consisting of the nucleotide sequences as shown in SEQ ID NOS: 1 through 3360 and sequences complementary thereto.

12. An oligonucleotide created so that it contains information of the polymorphic site present in a gene encoding a drug metabolizing enzyme.

13. The oligonucleotide according to claim 12, which is created so that the nucleotide positioned at its 5' or 3' end or its central part is the polymorphic site.

14. The oligonucleotide according to claim 12, wherein the oligonucleotide containing a polymorphic site is composed of two fragments being linked to each other, one fragment being hybridizable to the gene encoding a drug metabolizing enzyme and the other fragment being not hybridizable thereto, and said polymorphic site is positioned at the 5' or 3' end of the hybridizable fragment.

15. The oligonucleotide according to any one of claims 12 to 14, wherein the oligonucleotide comprising an at least 13 nucleotide sequence within any of the nucleotide sequences as shown in SEQ ID NOS: 1 through 3360, said at least 13 nucleotide sequence containing the 21<sup>st</sup> nucleotide, or a sequence complementary to said at least 13 nucleotide sequence.

16. A genetic polymorphism detection kit comprising the oligonucleotide according to any one of claims 11 to 15.

[Detailed Description of the Invention]

[Technical Field to which the Invention Pertains]

The present invention relates to information on genetic polymorphisms; a method for detecting information on genetic polymorphisms; a method for evaluating drugs using genetic polymorphisms; and a method for screening for drugs.

[Background Art]

As physical appearances of human individuals vary infinitely, the human genetic code consisting of three billion (3,000,000,000) base pairs vary at a considerably large number of sites when compared among individuals. These differences in the genetic code

are called genetic polymorphisms, and single nucleotide polymorphism is known as a representative polymorphism.

Single nucleotide polymorphism (SNP) means a difference in one DNA letter among individuals. As faces and shapes of human individuals vary infinitely, nucleotide sequences (i.e. genetic code) of individuals vary at a considerably large number of sites. SNPs are classified into cSNP (coding SNP) and gSNP (genome SNP) depending on their locations; cSNP is further classified into sSNP (silent SNP), rSNP (regulatory SNP) and iSNP (intron SNP).

These SNPs are useful as polymorphic markers in searching for those genes which are associated in the development or worsening of diseases; finally, these SNPs directly relates to risk diagnosis of diseases or selection and use of therapeutic drugs in the clinical field. Also, drug development on the basis of evidence obtained using causative substances as target molecules has become the trend of the world. When a drug is administered to patients with the same disease, their responsiveness is diverse. Some patients show remarkable effect; some patients show low effect; and some patients show no effect. Thus, responsiveness to a drug varies greatly depending on the patient. Even if the conditions of patients are the same and diagnosed as the same disease, the routes which have caused that disease may be different; or the metabolizing rate of the drug may vary greatly among patients. Therefore, it is desired to select an appropriate drug and develop an appropriate therapeutic method against a target disease based on genetic polymorphisms such as SNPs (i.e. the so-called personalized medicine is desired).

In addition to responsiveness to drugs, the problem of strong side effect which sometimes might be lethal is also one of the major problems that medical staffs should address. Even if there is no excessive administration caused by prescription error or the like, unexpected, lethal side effect might occur. Therefore, with respect to responsiveness to a drug, it is desired that the metabolism and delivery of the drug, the responsiveness of the drug's receptor and the sensitivities of those receptors associated with side effect should be determined taking into account genetic polymorphisms such as SNPs.

[Problem to be Solved by the Invention]

It is an object of the present invention to provide a method for detecting information on genetic polymorphism; a method for evaluating the efficacy and safety of drugs based on the information; and a method for screening for drugs.

[Means for Solving Problem]

As a result of extensive and intensive researches toward the solution of the above problem, the present inventors have succeeded in establishing a method which comprises

detecting genetic polymorphisms in a gene encoding a drug metabolizing enzyme and evaluating with the resultant information the relationship between a drug and a disease. Thus, the present invention has been achieved.

The present invention is as described below.

5           (1) A method for detecting a genetic polymorphism(s), comprising creating oligonucleotide probes and/or oligonucleotide primers so that the probes and/or primers contain a gene polymorphic site(s) present in a gene encoding a drug metabolizing enzyme or so that the polymorphic site(s) is/are contained in the amplified fragment when at least one of said gene encoding the drug metabolizing enzyme is amplified; and detecting at least one  
10 genetic polymorphism in a gene of a subject encoding the drug metabolizing enzyme using the resultant oligonucleotide probes and/or oligonucleotide primers.

The oligonucleotide probe and/or oligonucleotide primer containing a gene polymorphic site is created so that the nucleotide positioned at its 5' or 3' end or its central part is the polymorphic site. The oligonucleotide probe containing a gene polymorphic site  
15 is composed of two fragments being linked to each other, one fragment being hybridizable to the gene encoding a drug metabolizing enzyme and the other fragment being not hybridizable thereto, and said polymorphic site is positioned at the 5' or 3' end of the hybridizable fragment. The oligonucleotide probes and/or oligonucleotide primers containing a gene polymorphic site include an oligonucleotide comprising an at least 13 nucleotide  
20 sequence within any of the nucleotide sequences as shown in SEQ ID NOS: 1 through 3360, said at least 13 nucleotide sequence containing the 21<sup>st</sup> nucleotide, or a sequence complementary to said at least 13 nucleotide sequence. The types of genetic polymorphisms include single-nucleotide polymorphism, polymorphism caused by deletion, substitution or insertion of a plurality of nucleotides, or VNTR or microsatellite  
25 polymorphism.

(2) A method for evaluating a drug, wherein the effectiveness and safety of a drug metabolized by the drug metabolizing enzyme are evaluated based on the results obtained by the detection method according to the above method.

(3) A method for screening a drug, wherein the drug to be used is selected based  
30 on the results obtained in the above evaluation method.

(4) A method for screening a drug, wherein the genetic polymorphism data associated with the gene encoding a drug metabolizing enzyme in a control subject is compared to the genetic polymorphism data associated with the same gene in a test subject, and wherein a drug to be used is selected from the results of an analysis of the effectiveness  
35 and/or safety of the drugs metabolized by the drug metabolizing enzyme.

In the above detecting method, evaluating method or screening method, information of the genetic polymorphism includes polymorphic site is as shown in Table 1. Example of the drug metabolizing enzyme includes at least one, selected from the group consisting of epoxide hydrolase, methyltransferase, N-acetyltransferase, sulfotransferase, quinone oxidoreductase, glutathione S-transferase, UDP-glycosyltransferase, aldehyde dehydrogenase, alcohol dehydrogenase, esterase, NDUF, cytochrome P450 (CYP) and ATP-binding cassette.

(5) An oligonucleotide selected from the group consisting of the nucleotide sequences as shown in SEQ ID NOS: 1 through 3360 and sequences complementary thereto.

(6) An oligonucleotide created so that it contains information of the polymorphic site present in a gene encoding a drug metabolizing enzyme.

The above oligonucleotide is created so that the nucleotide positioned at its 5' or 3' end or its central part is the polymorphic site. The oligonucleotide is composed of two fragments being linked to each other, one fragment being hybridizable to the gene encoding a drug metabolizing enzyme and the other fragment being not hybridizable thereto, and said polymorphic site is positioned at the 5' or 3' end of the hybridizable fragment. Example of the oligonucleotide includes an oligonucleotide comprising an at least 13 nucleotide sequence within any of the nucleotide sequences as shown in SEQ ID NOS: 1 through 3360, said at least 13 nucleotide sequence containing the 21<sup>st</sup> nucleotide, or a sequence complementary to said at least 13 nucleotide sequence.

(7) A genetic polymorphism detection kit comprising the oligonucleotide described above.

[Mode for Carrying Out the Invention]

The present invention relates to a method for detecting a genetic polymorphism in a test subject using the genetic polymorphism data related to a drug metabolizing enzyme. The present invention analyzes the effectiveness, safety and strength of drugs metabolized by a drug metabolizing enzyme. The relationship between a disease and the drug to be evaluated is based on the results of the analysis. The genetic polymorphism data for the drug metabolizing enzyme is different for each patient with a given disease. Therefore, the effectiveness and safety of a specific drug depends on drug metabolism in the presence of certain genetic polymorphism data and the side effects in the presence of certain genetic polymorphism data. As a result, a physician can determine whether a certain drug should be used by a certain patient and can tailor drugs for use by a certain patient based on the genetic polymorphism data (so-called "made-to-order" treatments).

## 1. Genetic Polymorphism

Genetic polymorphism includes single nucleotide polymorphism, insertion/deletion polymorphism, and polymorphism caused by difference in the number of repetition of a nucleotide sequence. Generally, single nucleotide polymorphism (SNP) means a polymorphism caused by substitution of one specific nucleotide with other nucleotide in a gene or its complementary strand (complementary sequence) region. In the present invention, however, the term SNP also includes the polymorphism caused by substitution above as well as a polymorphism caused by deletion of the nucleotide and a polymorphism caused by addition of one more nucleotide to the nucleotide.

Insertion/deletion type polymorphism means a polymorphism caused by deletion or insertion of a plurality of nucleotides (e.g. two to several ten nucleotides). Sometimes, several hundred to several thousand nucleotides may be deleted or inserted. The polymorphism caused by difference in the number of repetition of a nucleotide sequence has repetition of a sequence of two to several ten nucleotides, and the number of this repetition varies among individuals. Those polymorphisms where the repeat unit consists of several to several ten nucleotides are called VNTR (variable number of tandem repeats) polymorphism, and those polymorphisms where the repeat unit consists of about two to four nucleotides are called microsatellite polymorphism. In VNTR or microsatellite polymorphisms, the number of such repetition is different among individuals' alleles, which results in acquisition of variation.

## 2. Drug Metabolizing Enzyme

"Drug metabolizing enzymes" refer to a group of enzymes that catalyze *in vivo* structural changes in exogenous materials including drugs. When used for clinical purposes, the group of metabolizing enzymes includes some endogenous materials. Because drug-metabolizing enzymes absorb, metabolize and secrete drugs, the polymorphism of an enzyme depends on the amount of enzyme expressed (transcription and translation) and the amount of activity. As a result, there are blood serum concentrations of both unchanged materials and metabolites.

Drug metabolizing enzymes expressed by the genes that are targeted for genetic polymorphism analysis in the present invention include, but are not limited to the following classes of enzymes:

Epoxide hydrolases

Methyltransferases

N-acetyltransferases



Sulfotransferases

Quinone oxidoreductases

Glutathione S-transferases

UDP-glycosyltransferases

5 Aldehyde dehydrogenases

Alcohol dehydrogenases

Esterases

Ubiquinone dehydrogenases : NDUF

Cytochrome P450s (CYPs)

10 ATP-binding cassettes

ATP-binding cassettes

Other enzymes

(1) Epoxide hydrolases are enzymes that hydrolyze epoxide using a  
15 trans-cleavage mechanism to produce 1,2-glycol. Examples include microsomal epoxide  
hydrolase 1 and cytoplasmic epoxide hydrolase 2.

(2) Methyltransferases are enzymes that catalyze transmethylation in amino  
groups, hydroxyl groups and thiol groups. Examples include the following.

Catechol-O-methyltransferase

20 Histamin-N-methyltransferase

Phenylethanolamine-N-methyltransferase

Phosphatidylethanolamine-N-methyltransferase

Nicotinamide-N-methyltransferase

Guanidinoacetate-N-methyltransferase

25 Acetylserotonin-O-methyltransferase

(3) N-acetyltransferases are enzymes that catalyze transacetylation in amino  
groups, sulfonamide groups and hydrazine groups. Examples include the following.

Arylamine-N-acetyltransferase 1, 2

Arylalkylamine-N-acetyltransferase

30 N-acetyltransferase homologues of *Saccharomyces cerevisiae*

LI intracellular adhesion molecules

(4) Sulfotransferases are enzymes that contribute to sulfate conjugation and  
catalyzes trans-sulfonylation in phenols, steroids, arylamines and biliary acid. Examples  
include the following.

35 Sulfotransferase 1A1, 1A2, 1A3, 1C1, 1C2, 2A1, 2B1

Thyroid hormone sulfotransferase  
 Tyrosyl protein sulfotransferase 1, 2  
 Sulfotransferase-opening protein 3  
 Estrogen sulfotransferase  
 5 Cerebroside sulfotransferase  
 HNK-sulfotransferase 1  
 Carbohydrate sulfotransferase 2, 4, 5

(5) Quinone oxidoreductases are enzymes that catalyze the reduction of quinones such as o-quinone and p-quinone. Examples include the following.

10 NAD(P)H: Quinone oxidoreductase 1  
 NRH: Quinone oxidoreductase 2  
 Quinone oxide transferase homologue

(6) Glutathione S-transferases are enzymes that catalyze the conjugation of glutathione. Examples include the following.

15 Glutathione S-transferase Mu1, Mu2, Mu3, Mu4, Mu5  
 Glutathione S-transferase Z (zeta)  
 Glutathione S-transferase  $\Pi$  (pi)  
 Glutathione S-transferase 1 Theta 1, Theta 2  
 Microsomal Glutathione S-transferase 1  
 20 Microsomal Glutathione S-transferase 1-like 1  
 Microsomal Glutathione S-transferase 2, 3  
 Glutathione S-transferase Ha subunit 1, 2  
 Glutathione S-transferase A3, A4

(7) UDP-glycosyltransferases are enzymes that catalyze the contribution of glucuronic acid to functional groups such as hydroxyl groups, carboxyl groups, amino groups and thiol groups after their introduction in the 1st drug metabolism route. Examples include the following.

UDP-glycosyltransferase 1  
 UDP-glycosyltransferase 2 Family Polypeptide A1, B7, B10, B4, B11, B15, B17  
 30 UDP-glycosyltransferase 8  
 Dolichyl-diphospho-oligosaccharide protein glycosyl transferase

(8) Aldehyde dehydrogenases are enzyme that converts aldehydes into carboxylic acids. Examples include Aldehyde dehydrogenase 1 through 10.

(9) Alcohol dehydrogenases are enzymes that convert alcohols into aldehydes  
 35 or ketones. Examples include the following.

Alcohol dehydrogenase 1 through 7

Hydroxy-CoA-dehydrogenase

Short-chain alcohol dehydrogenase family genes

(10) Esterases are enzymes that hydrolyze some esters. Examples include the following.

Arylacetoamide deacetylase

Granzyme A

Granzyme B

Interleukin 17

10 Ubiquitin carboxyl-terminal esterase L1, 3

Carboxyl esterase 1

Lipase A

Esterase D-formylglutathione hydrolase

Carboxylester lipase

15 (11) Ubiquinone dehydrogenases (NDUF) are enzymes that support energy metabolism, *e.g.*, as in the mitochondrial respiratory chain. Examples include NADH-dehydrogenase 1 $\alpha$ -subunit 1 through 10

(12) Cytochrome P450s (CYPs) are enzymes that regulate 1st drug metabolism and introduce oxygen atoms to the drug. Examples include following.

20 Cytochrome P450 (CYP) 1A1, CYP 1A2, CYP 2A6, CYP 2B6, CYP 2C8, CYP 2C18, CYP 2C9, CYP 2C19, CYP 2E1, CYP 2D6, CYP 2E1, CYP 2F1, CYP 3A3, CYP 3A4, CYP 3A7, CYP 3A43, CYP 4A11, CYP 4B1, CYP 4F2, CYP 4F3, CYP 4F8, CYP 11B1, 2, CYP 17, CYP 19, CYP 21A2, CYP 27.

(13) ATP-binding cassettes/transporter absorb the drug and adjust the interstitial concentration with a transporter. Examples include the following.

ATP-Binding Cassette Subfamily A Members 1 through 6 and 8

ATP-Binding Cassette Subfamily B Members 1 through 11

ATP-Binding Cassette Subfamily C Members 1 through 6 and 8 through 10

ATP-Binding Cassette Subfamily D Members 1 through 4

30 ATP-Binding Cassette Subfamily E Member 1

ATP-Binding Cassette Subfamily F Members 1 through 3

ATP-Binding Cassette Subfamily G Member 1

(14) Other enzymes include gamma glutamyl transferase 1 and transglutaminase 1.

35

### 3. Information on Genetic Polymorphisms

Genetic polymorphism data can be obtained using any general genetic polymorphism detection method. Examples include PCR methods hybridization methods using an allele-specific oligonucleotide matrix (e.g., TaqMan PCR method, Invader assay method), primer extension reaction methods, sequencing methods, MALDI-TOF/MS methods and the DNA chip methods, etc. PCR methods or sequencing methods are applicable to detection of any genetic polymorphisms and the other methods are applicable to detection of SNP.

TaqMan PCR is a method using PCR reaction with a fluorescence-labeled, allele-specific oligo(s) and Taq DNA polymerase (Livak, K.J. *Genet. Anal.* 14, 143 (1999); Morris T. et al., *J. Clin. Microbiol.* 34, 2933 (1996)). The invader method is a method in which the hybridization of two reporter probes specific to respective alleles of SNP and one invader probe to the template DNA is combined with DNA cleavage by an enzyme having a special endonuclease activity of cleaving upon recognition of DNA structure (for example, see Livak, K. J. *Biomol. Eng.* 14, 143-149 (1999); Morris T. et al., *J. Clin. Microbiol.* 34, 2933 (1996); Lyamichev, V. et al., *Science*, 260, 778-783 (1993)).

As methods using primer extension reaction, SniPer method may be employed, for example. The basic principle of SniPer method is a technique called RCA (rolling circle amplification) method in which DNA polymerase moves on a circular single-stranded DNA as a template to thereby synthesize a complementary strand thereto continuously. According to this method, SNP may be judged by detecting the presence or absence of a coloring reaction that occurs when DNA amplification takes place (Lizardi, P. M. et al., *Nature Genet.*, 19, 225-232 (1998); Piated, A. S. et al., *Nature Biotech.*, 16, 359-363 (1998)).

The sequencing method refers to methods in which polymorphism-containing areas are amplified by PCR and the DNA sequences of the amplified products are sequenced with Dye Terminator or the like to thereby analyze the frequency of genetic polymorphisms (especially SNPs).

MALDI-TOF/MS method is a method using a mass spectrometer. Basically, this is a method for SNP genotyping utilizing the difference in mass of different nucleotides. There are methods using PCR amplification and methods using multiplex (Haff, L.A., Smirnov, I.P., *Genome Res.*, 7, 378- (1997); Little, D.P. et al. *Eur. J. Clinica. Chem. Clin. Biochem.*, 35, 545- (1997); Ross, P., et al. *Nat Biotechnol.*, 16, 1347- (1998)).

The DNA chip method is a method in which a large variety of DNA probes are aligned and immobilized on a baseboard such as glass; then, hybridization of a labeled DNA is performed thereon; and perfect match and one-nucleotide-mismatch are detected

discriminably by using a method of detecting the label signal (such as fluorescence) on the probe.

The information on genetic polymorphisms, in particular information on SNPs, which may be used in the method of the present invention is as shown in Table 1 below.

5 [Table 1]

In Table 1, the "Designation of Gene" column shows the designations of the genes encoding receptors. The nucleotides expressed with capital letters in the "Sequence" column are the SNP information. The two nucleotides on both sides of the mark "/" represent a homozygous or heterozygous SNP of the nucleotide. For example, "A/G" means that the allele is A/A or G/G homozygote or A/G heterozygote. The sequences in this Table basically represent 20 nucleotides each before and after the SNP. However, the nucleotide in parentheses [e.g. (T) in No. 26 of ABCB4] represents a polymorphism caused by insertion. The mark of open triangle (e.g. see No. 10 of NAT2) means a polymorphism caused by deletion of one nucleotide. In the nucleotide sequence in SEQ ID NO:674, n means VNTR and represents repeat sequence consisting of (cctgy)x (X represents integer of 1 to 50). The nucleotide in parentheses provided with a number means that the nucleotide in the parentheses is repeated that number of times. For example, "(T) 9-12" appearing in SEQ ID NO: 1552 (Table 1, No. 55 of ABCB11) means a sequence where T is repeated from 9 to 12 times.

The "Location" shows the location of SNP in the genome. The locations of SNPs in 5' flanking region, intron regions and 3' flanking region are counted taking the first nucleotide located immediately to the exon/intron junction as position 1 of the nucleotide sequence of the intron. The locations of SNPs in exon region are counted taking the first nucleotide located immediately to the exon/intron junction as position 1 of the nucleotide sequence of the exon. Numbers with "+" mark or without any mark mean that they are counted toward the 3' end of the gene; numbers with "-" mark mean that they are counted toward the 5' end of the gene. The numbers appearing in the "No." column correspond to the numbers appearing in respective gene maps (Figs. 9-141) which show the locations of SNPs.

#### 4. Preparation of Oligonucleotide Probes or Oligonucleotide Primers

Oligonucleotides which are used in the detection method of the present invention as primers and/or probes may be prepared based on the nucleotide sequences described in Table 1 (SEQ ID NOS: 1-3360), for example, when SNPs are to be detected, and these sequences

*per se* may be synthesized, or primers and/or probes may be designed and synthesized so that they contain a part of these sequences. However, it should be noted here that the nucleotide sequences of such primers or probes must contain an SNP (the portion indicated in capital letters in the "Sequence" column in Table 1). The present invention also includes  
 5 complementary strands to such sequences.

Taking SNP as an example for the purpose of illustration, a primer or probe is designed so that an SNP site is located at the 3' or 5' end of the nucleotide sequence of the primer or probe; or a primer or probe is designed so that an SNP site is located at the 3' or 5' end of the sequence complementary to its nucleotide sequence; or a primer or probe is  
 10 designed so that an SNP site is located within four nucleotides, preferably two nucleotides, from the 3' or 5' end of its nucleotide sequence or the sequence complementary thereto. Alternatively, a primer or probe is designed so that an SNP site is located at the center of the full-length nucleotide sequence of the oligonucleotide. The "center" refers to a central region where the number of nucleotides counted from there toward the 5' end and the  
 15 number of nucleotides counted from there toward the 3' end are almost equal. If the number of nucleotides of the oligonucleotide is an odd number, the "center" is the central five nucleotides, preferably the central three nucleotides, more preferably the single nucleotide at the very center. For example, if the oligonucleotide consists of 41 nucleotides, the "center" is from position 19 to position 23 nucleotides, preferably from position 20 to  
 20 position 22 nucleotides, more preferably the nucleotide at position 21. If the number of nucleotides of the oligonucleotide is an even number, the "center" refers to the central four nucleotides, preferably the central two nucleotides. For example, if the oligonucleotide consists of 40 nucleotides, the "center" is from position 19 to position 22 nucleotides, preferably the nucleotide at position 20.

If the polymorphism consists of a plurality of bases, the probe/primer is designed so the full polymorphism sequence is contained in the probe/primer. In some preferred embodiments, it is designed so one of the bases 1 through 4 on the 5' end or 3' end complementing the primer DNA corresponds to the base at the very end of the polymorphism bases. (This is called the "corresponding base"; ideally, it is the base at the  
 30 5' or 3' end). For example, in the INVADER assay, if a probe and INVADER oligonucleotide are prepared to detect a genetic polymorphism (CAGAGGCT) in No. 12 of NDUFA7 in Table 1 (SEQ ID NO: 828), the position of the corresponding base in the probe in FIG 4a (a "T" base in the figure) is designed to become "C" at the far left of sequence CAGAGGCT, and the N base in the INVADER oligonucleotide shown in FIG 4b is  
 35 designed to replace the "C" at the far left of CAGAGGCT with A, T, C or G). Conversely,

if designed so the position of the corresponding base in the INVADER oligonucleotide is the far right "T" in CAGAGGCT, the "N" base is such that the corresponding base in the probe is "T." Further, the corresponding base of the INVADER oligonucleotide and the allele probe can be set anywhere in the CAGAGGCT sequence.

5           The length of the nucleotide sequence is designed so that at least 13 nucleotides, preferably 13 to 60 nucleotides, more preferably 15 to 40 nucleotides, and most preferably 18-30 nucleotides are contained. This oligonucleotide sequence may be used as a probe for detecting a target gene, and it may be used as either a forward (sense) primer or a reverse (antisense) primer.

10           The oligonucleotide used in the invention may be an oligonucleotide composed of two regions connected in tandem, one region being hybridizable to the genomic DNA and the other region being not hybridizable thereto. The order of connection is not particularly limited; either region may be located upstream or downstream. The hybridizable region of this oligonucleotide is designed based on the information on SNP-containing sequences  
15           described in Table 1. The oligonucleotide is prepared so that the nucleotide located at the 5' or 3' utmost end of the region hybridizable to the genomic DNA corresponds to an SNP of interest. The region of the above oligonucleotide not hybridizable to the genomic DNA is designed at random so that it does not hybridize to the SNP-containing sequence described in Table 1. This oligonucleotide may be used as a probe mainly for detecting SNPs in the  
20           invader method.

          Further, the primer used in the present invention is designed so that a nucleotide sequence given in Table 1 contains a SNP when amplified by PCR for the purposes of examining functional changes resulted from the SNP, judging the efficacy or non-efficacy, and examining the occurrence of side effect. The length of the primer is designed so that at  
25           least 15 nucleotides, preferably 15 to 30 nucleotides, more preferably 18 to 24 nucleotides are contained in the primer. The primer sequence is appropriately selected from the template DNA so that the amplified fragment has a length of 500 bp or less, preferably 100 to 300 bp, more preferably 100 to 150 bp.

          The thus designed oligonucleotide primers or probes may be synthesized  
30           chemically according to known techniques. Usually, such primers or probes are synthesized with a commercial chemical synthesizer.

          It is also possible to label probes with fluorescent substances (e.g. FAM, VIC, Cy3, etc.) in advance to thereby automate detection procedures.

          The above-described oligonucleotide may be included in a genetic polymorphism  
35           detection kit together with polymerases (e.g. Taq polymerase), buffers (e.g. Tris buffer),

dNTPs and fluorescent dyes such as VIC, FAM.

## 5. Detection

Using the oligonucleotides prepared as described above as primers, a gene encoding a drug metabolizing enzyme (template DNA) is amplified with a DNA polymerase. Alternatively, the probe prepared as described above is hybridized to template DNAs to thereby detect those DNAs having the genetic polymorphism of interest. The template DNA may be prepared according to conventional methods, e.g. cesium chloride gradient centrifugation, the SDS lysis method, or phenol/chloroform extraction.

### (1) Detection by PCR

Amplification may be performed by polymerase chain reaction (PCR). Specific examples of useful DNA polymerase include LA Taq DNA polymerase (Takara), Ex Taq polymerase (Takara), Gold Taq polymerase (Perkin Elmer), AmpliTaq (Perkin Elmer), Pfu DNA polymerase (Stratagene) and the like.

Amplification conditions are as follows. Denaturation step at 85-105°C for 10-40 seconds, preferably at 94°C for 20-30 seconds; annealing step at 50-72°C for 30 seconds to 1 minute, preferably at 60°C for 20 seconds to 1 minutes; and extension step at 65-75°C for 1-4 minutes, preferably at 72°C for 2-3 minutes constitute one cycle, and 30 to 40 cycles are performed. However, in order to denature the template DNA and the primers sufficiently, a denaturation step of at 95°C for 1-5 minutes [if Gold Taq polymerase (Perkin Elmer) is used, at least 8-15 minutes, preferably 10-12 minutes] may be added before the start of the above-described amplification cycles. Also, in order to extend the amplified DNA completely, an extension step of at 72°C for 1-10 minutes may be added after the above amplification cycles. Moreover, if the detection of the amplified product is not performed immediately, it is desirable to add a step of storing the amplified product at 4°C to avoid unspecific amplification. Thus, a gene encoding a receptor can be amplified.

Subsequently, the amplified product is subjected to agarose gel electrophoresis, followed by staining with ethidium bromide, SYBR Green solution or the like to thereby detect the amplified product as a band or two to three bands (DNA fragments). Thus, a part of a gene encoding a drug metabolizing enzyme, containing a genetic polymorphism can be detected as a DNA fragment. Instead of agarose gel electrophoresis, polyacrylamide gel electrophoresis or capillary electrophoresis may be performed. It is also possible to perform PCR using primers labeled in advance with a substance such as fluorescent dye and to detect the amplified product. A detection method which does not require electrophoresis may also be employed; in such a method, the amplified product is bound to a solid support



such as a microplate, and a DNA fragment of interest is detected by means of fluorescence, enzyme reaction, or the like.

## (2) Detection by TaqMan PCR

TaqMan PCR is a method using PCR reaction with fluorescently labeled allele-specific oligos and Taq DNA polymerase. The allele-specific oligo used in TaqMan PCR (called "TaqMan probe") may be designed based on the SNP information described above. The 5' end of TaqMan probe is labeled with fluorescence reporter dye R (e.g. FAM or VIC), and at the same time, the 3' end thereof is labeled with quencher Q (quenching substance) (Fig. 1). Thus, under these conditions, fluorescence is not detectable since the quencher absorbs fluorescence energy. Since the 3' end of TaqMan probe is phosphorylated, no extension reaction occurs from TaqMan probe during PCR reaction (Fig. 1). However, when PCR reaction is performed using this TaqMan probe together with Taq DNA polymerase and primers designed so that an SNP-containing region is amplified, the reaction described below occurs.

First, a TaqMan probe hybridizes to a specific sequence in the template DNA (Fig. 2a), and at the same time, an extension reaction occurs from a PCR primer (Fig. 2b). At this time, Taq DNA polymerase having 5' nuclease activity cleaves the hybridized TaqMan probe as the extension reaction of PCR primer proceeds. When the TaqMan probe has been cleaved, the fluorescent dye becomes free from the influence of the quencher. Then, fluorescence can be detected (Fig. 2c).

For example, as shown in Fig. 3, two alleles are supposed: one allele has A at the SNP site (allele 1) and the other allele has G at the SNP site (allele 2). A TaqMan probe specific to allele 1 is labeled with FAM and another TaqMan probe specific to allele 2 is labeled with VIC (Fig. 3). These two allele specific oligos are added to PCR reagents, and then TaqMan PCR is performed with a template DNA whose SNP is to be detected. Subsequently, fluorescence intensities of FAM and VIC are determined with a fluorescence detector. When the SNP site of the allele is complementary to the site within TaqMan probe corresponding to the SNP, the probe hybridizes to the allele; and Taq polymerase cleaves the fluorescent dye of the probe, which becomes free from the influence of the quencher. As a result, fluorescence intensity is detected.

If the template is a homozygote of allele 1, strong fluorescence intensity of FAM is recognized but the fluorescence of VIC is hardly recognized. If the template is a heterozygote of allele 1 and allele 2, fluorescence of both FAM and VIC can be detected.

## (3) SNP Detection by the Invader Method

The invader method is a method for detecting SNPs by hybridizing allele-specific

oligos to the template. In the invader method, two unlabeled oligos and one fluorescently labeled oligo are used. One of the two unlabeled oligos is called an "allele probe". The allele probe is composed of a region which hybridizes to the genomic DNA (template DNA) to form a complementary double strand, and a region (called "flap") which has a sequence entirely unrelated to the sequence of the template DNA and thus does not hybridize to the genomic DNA. A nucleotide located at the 5' or 3' utmost end of the hybridizable region corresponds to the SNP (Fig. 4a). The above-described flap sequence is an oligonucleotide having a sequence complementary to a FRET probe described later. The other oligo is called an "invader probe". This oligo is designed so that it hybridizes complementarily from the SNP site toward the 3' end of the genomic DNA (Fig. 4b). However, the nucleotide corresponding to the SNP ("N" in Fig. 4b) may be any nucleotide. Thus, when the genomic DNA (the template) is hybridized to the above-described two probes, one nucleotide (N) of the invader probe invades into the SNP position (Fig. 4c) forming a triple strand at the SNP site.

On the other hand, the fluorescently labeled oligo has a sequence completely unrelated to the allele. This sequence is common regardless of the types of SNPs. This probe is called a "FRET" probe (fluorescence resonance energy transfer probe) (Fig. 5). The nucleotide at the 5' end of FRET probe (reporter) is labeled with fluorescent dye R, while quencher Q is linked upstream of the reporter. Therefore, under these conditions, the quencher absorbs the fluorescent dye and no fluorescence is detectable. A certain region of the FRET probe starting from the 5' end reporter nucleotide (designated "region 1") is also designed so that it is complementary to a certain region of the probe located 3' to region 1 (designated "region 2") when region 1 and region 2 are faced with each other. Therefore, region 1 and region 2 form a complementary strand within the FRET probe (Fig. 5). Also, the region located toward 3' end of this complementary strand forming region is designed so that it hybridizes to the flap of the allele probe to thereby form a complementary strand (Fig. 5).

In the invader method, an enzyme called cleavase is used which is one of enzymes (5' nucleotidases) having a unique endonuclease activity of cleaving upon recognition of a special structure of DNA. Cleavase is an enzyme which cleaves the allele probe at a point immediately 3' to the SNP site when the genomic DNA, the allele probe and the invader probe form a triple strand at the SNP site. Therefore, when three nucleotides form a triple strand as shown in Fig. 4c, cleavase recognizes the 5' flap and cuts off this flap. As a result, the structure of this SNP site is recognized by cleavage (Fig. 6a), and the allele probe is cut at the site of its flap to liberate the flap (Fig. 6b). Subsequently, the flap liberated from the

allele probe complementarily binds to the FRET probe since it has a sequence complementary to the FRET probe (Fig. 6c). At this time, the SNP site of the flap invades into the portion of the FRET probe which has already formed a complementarily bound region. Cleavase again recognizes this structure and cuts off the nucleotide labeled with the fluorescent dye. The thus cleaved fluorescent dye becomes free from the influence of the quencher and emits fluorescence (Fig. 6d). When the SNP does not match the nucleotide corresponding to the SNP in the allele probe, a specific DNA structure recognizable by cleavase is not formed as seen in Fig. 7. Thus, the probe is not cleaved and no fluorescence is detected.

For example, when an SNP is T/C, an invader probe and an allele probe for T, and a FRET probe with a FAM-linked reporter corresponding to the SNP are prepared. Separately, an invader probe and an allele probe for C, and a FRET probe with a VIC-linked reporter corresponding to the SNP are also prepared. Then, all of them are mixed to carry out SNP detection. As a result, if the SNP is T/T homozygous, the fluorescence of FAM is emitted; if the SNP is C/C homozygous, the fluorescence of VIC is emitted; and if the SNP is T/C heterozygous, the fluorescence of both FAM and VIC is emitted. Since FAM and VIC have different fluorescent wavelengths, they can be discriminated.

#### (4) Detection by SniPer Method

In order to detect SNPs by SniPer method, it is possible to discriminate alleles by examining the presence or absence of amplification by RCA. Briefly, the genomic DNA to be used as a template is linearized. Then, a probe is hybridized to this genomic DNA. When the probe sequence and the sequence of the genomic DNA as a template are complementary to each other and form a complementary strand, the genomic DNA can be converted into a circular DNA through ligation reaction. As a result, RCA of the circular DNA proceeds. On the other hand, when the ends of the probe do not match with the genomic DNA, the DNA is not ligated to become a circular DNA. Thus, RCA reaction does not proceed. Therefore, in SniPer method, a single-stranded probe which anneals with the genomic DNA and is circularizable is designed. This single-stranded probe is called a padlock probe. The sequences of the two ends of this padlock probe are designed so that they correspond to the SNP to be detected. Then, this padlock probe and the genomic DNA are mixed for ligation. If the two ends of the padlock probe and the SNP site of the genomic DNA are complementary to each other, the two ends of the padlock probe are joined by ligation, yielding a circular probe. If the two ends of the padlock probe and the SNP site of the genomic DNA are not complementary to each other, the probe does not become circular. Therefore, only those padlock probes which are complementary to the

SNP to be detected become circular and are amplified by DNA polymerase. By detecting the presence or absence of this amplification, SNP may be detected. For the detection, synthetic oligonucleotides which have a fluorescent dye and a quencher at their respective ends and also have a hairpin structure are used.

5 (5) Detection by MALDI-TOF/MS Method

MALDI-TOF/MS (Matrix Assisted Laser Desorption-Time of Flight/Mass Spectrometry) is a method using a mass spectrometer in SNP typing. This method is composed of the following steps.

(i) PCR Amplification and Purification of SNP-Containing DNA Fragments

10 PCR primers are designed so that there is no overlapping between them and the nucleotides of SNP site. Then, DNA fragments are amplified. The amplified fragments are purified from the amplification reaction product by treatment with exonuclease, alkaline phosphatase, etc. to remove primers, dNTPs, etc.

(ii) Primer Extension (Thermal Cycling) and Purification

15 Ten-fold or more primers are added to the template of the target region (which is the PCR product), and primer extension is performed by thermal cycling. The primers used here are designed so that their 3' ends are adjacent to the nucleotide of the SNP site. The length of the primer is 15 to 30 nucleotides, preferably 20 to 25 nucleotides. When multiplex reaction is performed, a sequence not complementary to the template is added to  
20 the 5' end. Thermal cycling is performed between the two temperatures of at 85-105°C (preferably 94°C) and at 35-40°C (preferably 37°C) for 20 to 30 cycles (preferably 25 cycles). The resultant reaction products are purified with a purification kit or the like to make them fit for mass spectrometer.

(iii) Mass Spectrometry of DNA with Mass Spectrometer

25 The purified extension reaction product is applied to a mass spectrometer to determine the mass of the objective product. Briefly, the purified product is mixed with a matrix, and 0.5-1.0 µl of the mixture is spotted on MALDI plate. After drying the plate, laser light is applied to the sample to prepare spectrograms.

(6) Detection by DNA Sequencing Method

30 In the present invention, polymorphisms may be detected by using single nucleotide extension reactions. Briefly, four types of dideoxynucleotides labeled with different fluorescent compounds are added to a reaction system containing a gene of interest. Then, single nucleotide extension reactions are performed. In this case, the nucleotide to be extended is the polymorphic site. Also, two reactions of DNA synthesis termination and  
35 the fluorescent labeling of the 3' end of DNA molecules are operated. Four types of

reaction solutions are subjected to electrophoresis on the same lane of a sequencing gel or on capillary. Difference in the fluorescent dyes used for labeling is detected with a fluorescence detector to thereby sequence the DNA band. Alternatively, the one-nucleotide extended oligonucleotide is examined with a fluorescence detection system or a mass spectrometry system or the like to thereby determine which nucleotide was extended using the difference in the fluorescent dyes. Instead of fluorescently labeled dideoxynucleotides, primers may be fluorescently labeled and used with unlabeled dideoxynucleotides.

## 6. Evaluation of Drugs

In the present invention, it is possible to evaluate the efficacy and safety of a drug intermediated by the receptor, from the results of detection of SNP and like that obtained as described above.

Evaluation of drugs may be performed by typing system. Briefly, according to any one of the detection methods described above, allele frequencies between toxicity (side effect) occurrence group and non-occurrence group are compared. A polymorphism which brings about difference in allele frequencies between the two groups is selected as a marker for recognizing the occurrence of toxicity. As a statistical test, usually chi square test is carried out, but other statistical processing such as Fisher test may also be used. The active components (altered and metabolized drug components) in the drug will be reflected in blood and tissue concentrations. With respect to all genetic polymorphisms, the relation of cause and effect with the action or toxicity is examined. Then, only those genetic polymorphism sites that show correlation with the action or toxicity are selected. Allele pattern can be examined by preparing in advance all probes or primers for analyzing the genetic polymorphisms and reagents necessary for each technique in reaction plates, cards, glass baseboards or the like, and adding thereto the genomic DNA of a human subject for reaction. When the subject has a genetic polymorphism which has correlation with the toxicity, it is possible to predict whether the drug exhibits toxicity in that subject. The efficacy of a drug may be evaluated in a similar manner. Also, genetic polymorphisms which correlate with side effect or efficacy vary depending on drugs. Therefore, by conducting typing using correlating genetic polymorphisms for each drug, it becomes possible to predict the efficacy or side effect of the relevant drug.

Using this, the frequency of the relevant genetic polymorphism is compared with efficacy/non-efficacy or presence/absence of side effect. When there is difference in allele frequency, a judgment on the relevant drug can be made.

For example, if the results of analysis of an SNP in persons who showed toxicity

(side effect) upon administration of drug A have revealed statistically that 90% of those persons have T/T (e.g. fluorescence intensity of FAM was detected), and if the results of analysis of the SNP in persons who did not show toxicity (side effect) have revealed that only 10% of those persons have T/T and 90% of them have C/C, drug A can be evaluated that it should not be administered to persons with T/T.

## 7. Screening for Drugs.

In the present invention, the genetic polymorphism data obtained as described above is compared to genetic polymorphism data from genes encoding certain drug metabolizing enzymes to indicate the safety and effectiveness of drugs metabolized by these drug metabolizing enzymes. Therefore, the genetic polymorphism data obtained using the method of the present invention can be used to determine the likely effectiveness of certain drug therapies and to select the appropriate drug.

As a method, the evaluation method described in "5. Evaluation of Drugs" may be used. Genetic polymorphisms with correlations to side-effects and effectiveness are said to be influenced by the activation, transfer and translation of certain enzymes. The cause and effect relationship with the side-effect or effectiveness expression mechanism may be indirect. The metabolization of drugs is being studied by pharmaceutical companies in laboratory and clinical testing. If there are genetic polymorphisms in enzyme genes correlating with severe side-effects, they can be removed and used under different conditions. The same is true of effectiveness. Drugs can be screened, therefore, using side-effects and effectiveness data.

Further, by conducting genetic polymorphism frequency analysis on cases of volunteers with side effect occurrence and cases without side effect occurrence in clinical tests (from phase I to phase III tests), it becomes possible to detect new genetic polymorphisms other than the above-mentioned polymorphism which correlate with side effect or efficacy. By examining such polymorphisms in the same manner as described above, drug screening becomes possible.

### [Examples]

Hereinbelow, the present invention will be described more specifically with reference to the following Example. However, the technical scope of the present invention is not limited to the Example.

#### [EXAMPLE 1] Obtaining SNP Information

##### (1) DNA Extraction

Blood samples were collected in the presence of EDTA from 48 individuals who have no kinship relation with one another. DNA extraction was carried as described below according to the method described in "Genome Analysis Laboratory Manual" (Yusuke Nakamura (ed.), Springer Verlag Tokyo).

5 Blood sample (10 ml) was transferred to a 50 ml Falcon tube and centrifuged at room temperature at 3000 rpm for 5 minutes. After removal of the supernatant (serum) with a pipette, 30 ml of RBC lysis buffer (10mM  $\text{NH}_4\text{HCO}_3$ , 144mM  $\text{NH}_3\text{Cl}$ ) was added and mixed until the precipitate became loosened. Then, the mixture was left at room temperature for 20 minutes. After centrifugation at room temperature at 3000 rpm for 5  
10 minutes, the supernatant (serum) was discarded with a pipette to obtain a pellet of white blood cells. RBC lysis buffer (30 ml) was added thereto, and the above-described operations were repeated twice. To the resultant white blood cell pellet, 4 ml of Proteinase K buffer (50mM Tris-HCl (pH7.4), 100mM NaCl, 1mM EDTA (pH8.0)), 200  $\mu\text{l}$  of 10% SDS, and 200  $\mu\text{l}$  of 10 mg/ml Proteinase K were added and mixed by inversion. The  
15 resultant mixture was left overnight stationery at 37°C. Subsequently, 4 ml of phenol was added to the mixture, which was then mixed slowly by inversion for 4 hours in a rotator (Rotator T-50, Taitec). After centrifugation at room temperature at 3000 rpm for 10 minutes, the resultant upper layer was collected into a fresh tube. Four milliliters of phenol/chloroform/isoamyl alcohol (25:24:1 in volume ratio) was added to the tube and  
20 mixed by inversion for 2 hours in the same manner as described above. Then, the mixture was centrifuged. The resultant upper layer was collected into a fresh tube, to which 4 ml of chloroform/isoamyl alcohol (24:1 in volume ratio) was added and mixed by inversion for 30b minutes in the same manner as described above. Then, the mixture was centrifuged. The resultant upper layer was collected into a fresh tube, to which 400  $\mu\text{l}$  of 8M ammonium acetate and 4 ml of isopropanol were added and mixed by inversion. Thread-like white  
25 deposit (DNA) was recovered into a 2 ml tube, to which 70% ethanol (1 ml) was added and mixed by inversion. The DNA was recovered into a fresh 2 ml tube and air-dried. Then, 500  $\mu\text{l}$  of TE solution (10mM Tris-HCl (pH7.4), 1mM EDTA (pH7.4)) was added for lysis, to thereby obtain a genomic DNA sample.

## 30 (2) PCR

Genomic sequences were obtained from GenBank DNA database. After removal of repeat sequences using RepMask computer program, PCR primers were designed so that PCR products have a length of about 1 kb. As genomic DNA, DNA samples obtained from 48 individuals who have no kinship relation with one another and prepared to have the same  
35 concentration were used. DNA samples derived from three individuals each were mixed in

a tube in equal amounts. Of this mixture, 60 ng was used in PCR. PCR was performed with Ex-Taq (2.5 U; Takara) using GeneAmp PCR System 9700 (PE Applied Biosystems). Following a reaction at 94°C for 2 minutes, 35 cycles of denaturation at 94°C for 30 seconds, annealing at 60°C or 55°C for 30 seconds and extension at 72°C for 1 minute were performed.

### (3) Sequencing

PCR products were purified with ArrayIt (Telechem) and subjected to sequencing reaction using BigDye Terminator RR Mix (PE Applied Biosystems). Briefly, following a reaction at 96°C for 2 minutes, 25 cycles of denaturation at 96°C for 20 seconds, annealing at 50°C for 30 seconds and extension at 60°C for 4 minutes were performed using GeneAmp PCR System 9700 (PE Applied Biosystems). After the sequencing reaction, sequences were analyzed with ABI PRISM 3700 DNA Analyzer.

### (4) Detection of SNPs

PolyPhred computer program (Nickerson et al., 1997, *Nucleic Acids Res.*, 25, 2745-2751) was used for the detection and analysis of SNPs.

### (5) Results

The results as shown in Table 1 were obtained on SNPs. Figs. 9 to 141 show the designations, abbreviations and GenBank database Accession Nos. of the analyzed drug metabolizing enzyme, the structures of the genes encoding them, and the locations of SNPs. In Figs. 9 to 141, exons are indicated as open boxes or black lines on the relevant gene expressed as a horizontal line. The locations of SNPs are indicated above the gene with solid lines provided with numbers.

#### [Example 2]

Typing was performed on two different groups of patients using the INVADER assay. Results are shown in FIG. 142. In FIG. 142, the x-axis (Allele 1) indicates the intensity of the FAM fluorescent light corresponding to T, and the x-axis (Allele 2) indicates the intensity of the VIC fluorescent light corresponding to C. The slanted line indicates the SNP pattern for T/T, the black circles denote the pattern for C/C, and the white circles denote the pattern for T/C. The black squares indicate the background values. The x marks indicate where the detection failed. The group of patients in the graph for panel A (top) had many C/C SNP patterns and the group of patients in the graph for panel B (bottom) had many T/T SNP patterns.

#### [Example 3] SNP Detection



Genome DNA was extracted from five unrelated people using the method described in Example 1, and the SNPs in three different drug metabolizing enzyme genes (EPHX1, ABCB2, AANAT) were detected using the INVADER assay method. The INVADER oligonucleotides and probes were designed using base sequence No. 3 (SEQ ID NO: 49) and No. 17 (SEQ ID NO: 63) in the case of EPHX1, base sequence No. 4 (SEQ ID NO: 4) and No. 11 (SEQ ID NO: 11) in the case of ABCB2, and base sequence No. 3 (SEQ ID NO: 561) in the case of AANAT. The positions of the SNPs are shown in Table 1.

The results are shown in Table 2.

**Table 2**

Drug Metabolizing Enzyme Gene	EPHX1		ABCB2		AANAT
	No. 3	No. 17	No. 4	No. 11	No. 3
	SEQ. ID No. 49	SEQ. ID No. 63	SEQ. ID No. 4	SEQ. ID No. 11	SEQ. ID No. 561
SNP	(T/G)	(A/G)	(G/T)	(G/A)	(T/A)
Subject I	T/T	A/G	T/T	G/A	T/T
Subject II	T/T	A/A	G/G	G/G	T/A
Subject III	T/G	A/A	G/G	A/A	T/T
Subject IV	G/G	A/G	G/T	G/G	T/T
Subject V	T/G	A/G	G/T	G/A	T/A

As shown in Table 2, the SNPs in the drug metabolizing genes of patients can be detected and the patterns determined using the method of the present invention.

#### [Effect of the Invention]

According to the present invention, methods for analyzing SNPs are provided. According to the methods of the invention, it becomes possible to select appropriate drugs for target diseases. Thus, the methods of the invention are extremely useful.

#### [SEQUENCE LISTING]

#### [SEQUENCE LISTING FREE TEXT]

SEQ ID NO 39 : n represents t (Location 21).

SEQ ID NO 64 : n represents c (Location 21).

SEQ ID NO 580 : n represents a or deletion (Location 21).

SEQ ID NO 634 : n represents a or deletion (Location 21).

SEQ ID NO 656 : n represents a or deletion (Location 21).

SEQ ID NO 658 : n represents c or deletion (Location 21).

- SEQ ID NO 671 : n represents a or deletion (Location 21).  
 SEQ ID NO 672 : n represents g or deletion (Location 21).  
 SEQ ID NO 673 : n represents c or deletion (Location 21).  
 SEQ ID NO 674 : n represents (cctgy)<sub>x</sub> (Location 21).  
 5 SEQ ID NO 676 : n represents gaa or deletion (Location 21).  
 SEQ ID NO 677 : n represents ag or deletion (Location 21).  
 SEQ ID NO 785 : n represents ta (Location 21).  
 SEQ ID NO 797 : n represents acac (Location 21).  
 SEQ ID NO 806 : n represents gattgtggtatccag (Location 21).  
 10 SEQ ID NO 808 : n represents ag or deletion (Location 21).  
 SEQ ID NO 809 : n represents ta or deletion (Location 21).  
 SEQ ID NO 815 : n represents t (Location 21).  
 SEQ ID NO 828 : n represents cagaggct (Location 21).  
 SEQ ID NO 830 : n represents ca or deletion (Location 21).  
 15 SEQ ID NO 831 : n represents ag or deletion (Location 21).  
 SEQ ID NO 843 : n represents gtaaa (Location 21).  
 SEQ ID NO 845 : n represents a (Location 21).  
 SEQ ID NO 888 : n represents tc (Location 21).  
 SEQ ID NO 890 : n represents t or deletion (Location 21).  
 20 SEQ ID NO 913 : n represents t or deletion (Location 21).  
 SEQ ID NO 932 : n represents t or deletion (Location 21).  
 SEQ ID NO 933 : n represents t or deletion (Location 21).  
 SEQ ID NO 955 : n represents at or deletion (Location 21).  
 SEQ ID NO 956 : n represents a or deletion (Location 21).  
 25 SEQ ID NO 957 : n represents c or deletion (Location 21).  
 SEQ ID NO 987 : n represents c (Location 21).  
 SEQ ID NO 999 : n represents gtt or deletion (Location 21).  
 SEQ ID NO 1164 : n represents at (Location 21).  
 SEQ ID NO 1166 : n represents c or deletion (Location 21).  
 30 SEQ ID NO 1167 : n represents t or deletion (Location 21).  
 SEQ ID NO 1168 : n represents t or deletion (Location 21).  
 SEQ ID NO 1169 : n represents g (Location 21).  
 SEQ ID NO 1171 : n represents c (Location 21).  
 SEQ ID NO 1173 : n represents t (Location 21).  
 35 SEQ ID NO 1175 : n represents c or deletion (Location 21).

- SEQ ID NO 1200 : n represents a or deletion (Location 21).  
 SEQ ID NO 1204 : n represents a (Location 21).  
 SEQ ID NO 1207 : n represents tt (Location 21).  
 SEQ ID NO 1210 : n represents at (Location 21).  
 5 SEQ ID NO 1245 : n represents t (Location 21).  
 SEQ ID NO 1248 : n represents t or deletion (Location 21).  
 SEQ ID NO 1249 : n represents t (Location 21).  
 SEQ ID NO 1251 : n represents a or deletion (Location 21).  
 SEQ ID NO 1252 : n represents tgt or deletion (Location 21).  
 10 SEQ ID NO 1260 : n represents t or deletion (Location 21).  
 SEQ ID NO 1309 : n represents a or deletion (Location 21).  
 SEQ ID NO 1389 : n represents g or deletion (Location 21).  
 SEQ ID NO 1411 : n represents a or deletion (Location 21).  
 SEQ ID NO 1417 : n represents aaag (Location 21).  
 15 SEQ ID NO 1424 : n represents gtg or deletion (Location 21).  
 SEQ ID NO 1426 : n represents gg or tgggtgggtgga (Location 21).  
 SEQ ID NO 1429 : n represents at or deletion (Location 21).  
 SEQ ID NO 1436 : n represents a (Location 21).  
 SEQ ID NO 1453 : n represents c or deletion (Location 21).  
 20 SEQ ID NO 1456 : n represents gg (Location 21).  
 SEQ ID NO 1465 : n represents gtc or deletion (Location 21).  
 SEQ ID NO 1487 : n represents t or deletion (Location 21).  
 SEQ ID NO 1494 : n represents tt (Location 21).  
 SEQ ID NO 1497 : n represents 9 to 12 repeats of t (Location 21).  
 25 SEQ ID NO 1499 : n represents a or deletion (Location 21).  
 SEQ ID NO 1501 : n represents 10 to 13 repeats of a (Location 21).  
 SEQ ID NO 1504 : n represents ct or deletion (Location 21).  
 SEQ ID NO 1507 : n represents cagatcttctcagctaatttagaaatgt (Location 21).  
 SEQ ID NO 1533 : n represents a or deletion (Location 21).  
 30 SEQ ID NO 1540 : n represents c (Location 21).  
 SEQ ID NO 1545 : n represents t (Location 21).  
 SEQ ID NO 1552 : n represents 9 to 12 repeats or t (Location 21).  
 SEQ ID NO 1555 : n represents t (Location 21).  
 SEQ ID NO 1557 : n represents aaaaaaagaaaa (Location 21).  
 35 SEQ ID NO 1558 : n represents aaaaaaaaaa (Location 21).

- SEQ ID NO 1559 : n represents aaaaaaaaaa (Location 21).  
 SEQ ID NO 1563 : n represents t or deletion (Location 21).  
 SEQ ID NO 1572 : n represents c (Location 21).  
 SEQ ID NO 1574 : n represents a or deletion (Location 21).  
 5 SEQ ID NO 1575 : n represents c or deletion (Location 21).  
 SEQ ID NO 1596 : n represents cct or deletion (Location 21).  
 SEQ ID NO 1598 : n represents tc (Location 21).  
 SEQ ID NO 1616 : n represents ca or deletion (Location 21).  
 SEQ ID NO 1638 : n represents g (Location 21).  
 10 SEQ ID NO 1661 : n represents t or deletion (Location 21).  
 SEQ ID NO 1690 : n represents gccag (Location 21).  
 SEQ ID NO 1718 : n represents t (Location 21).  
 SEQ ID NO 1723 : n represents c or deletion (Location 21).  
 SEQ ID NO 1729 : n represents tc or deletion (Location 21).  
 15 SEQ ID NO 1740 : n represents ct or deletion (Location 21).  
 SEQ ID NO 1771 : n represents a (Location 21).  
 SEQ ID NO 1781 : n represents a or deletion (Location 21).  
 SEQ ID NO 1787 : n represents t or deletion (Location 21).  
 SEQ ID NO 1791 : n represents t or deletion (Location 21).  
 20 SEQ ID NO 1792 : n represents g or deletion (Location 21).  
 SEQ ID NO 1800 : n represents t or deletion (Location 21).  
 SEQ ID NO 1801 : n represents t or deletion (Location 21).  
 SEQ ID NO 1802 : n represents a or deletion (Location 21).  
 SEQ ID NO 1815 : n represents a or deletion (Location 21).  
 25 SEQ ID NO 1819 : n represents ca or deletion (Location 21).  
 SEQ ID NO 1820 : n represents t or deletion (Location 21).  
 SEQ ID NO 1824 : n represents t or deletion (Location 21).  
 SEQ ID NO 1829 : n represents t or deletion (Location 21).  
 SEQ ID NO 1830 : n represents c or deletion (Location 21).  
 30 SEQ ID NO 1838 : n represents a or deletion (Location 21).  
 SEQ ID NO 1840 : n represents t or deletion (Location 21).  
 SEQ ID NO 1847 : n represents gatt or deletion (Location 21).  
 SEQ ID NO 1848 : n represents t (Location 21).  
 SEQ ID NO 1853 : n represents t or deletion (Location 21).  
 35 SEQ ID NO 1854 : n represents gt (Location 21).

- SEQ ID NO 1857 : n represents a or deletion (Location 21).  
 SEQ ID NO 1858 : n represents a or deletion (Location 21).  
 SEQ ID NO 1862 : n represents t or deletion (Location 21).  
 SEQ ID NO 1865 : n represents at or deletion (Location 21).  
 5 SEQ ID NO 1871 : n represents a or deletion (Location 21).  
 SEQ ID NO 1874 : n represents t or deletion (Location 21).  
 SEQ ID NO 1877 : n represents at or deletion (Location 21).  
 SEQ ID NO 1878 : n represents a or deletion (Location 21).  
 SEQ ID NO 1879 : n represents 12 to 14 repeats of t (Location 21).  
 10 SEQ ID NO 1882 : n represents t or deletion (Location 21).  
 SEQ ID NO 1884 : n represents cac or deletion (Location 21).  
 SEQ ID NO 1891 : n represents cca (Location 21).  
 SEQ ID NO 1919 : n represents t or deletion (Location 21).  
 SEQ ID NO 1949 : n represents c or deletion (Location 21).  
 15 SEQ ID NO 1957 : n represents aaaa or deletion (Location 21).  
 SEQ ID NO 1970 : n represents c or deletion (Location 21).  
 SEQ ID NO 1980 : n represents 7 to 9 repeats of t (Location 21).  
 SEQ ID NO 1981 : n represents a or deletion (Location 21).  
 SEQ ID NO 1993 : n represents taac or deletion (Location 21).  
 20 SEQ ID NO 1994 : n represents ctcttt (Location 21).  
 SEQ ID NO 1995 : n represents ct (Location 21).  
 SEQ ID NO 2002 : n represents a or deletion (Location 21).  
 SEQ ID NO 2005 : n represents t or deletion (Location 21).  
 SEQ ID NO 2008 : n represents g or deletion (Location 21).  
 25 SEQ ID NO 2011 : n represents aattagaa or deletion (Location 21).  
 SEQ ID NO 2012 : n represents tttaaaa or ttttaa (Location 21).  
 SEQ ID NO 2015 : n represents t or deletion (Location 21).  
 SEQ ID NO 2020 : n represents t or deletion (Location 21).  
 SEQ ID NO 2024 : n represents g or deletion (Location 21).  
 30 SEQ ID NO 2025 : n represents t or deletion (Location 21).  
 SEQ ID NO 2030 : n represents aaa or deletion (Location 21).  
 SEQ ID NO 2031 : n represents a or deletion (Location 21).  
 SEQ ID NO 2042 : n represents c (Location 21).  
 SEQ ID NO 2072 : n represents a or deletion (Location 21).  
 35 SEQ ID NO 2074 : n represents a or deletion (Location 21).

- SEQ ID NO 2243 : n represents 14 to 16 repeats of tca (Location 21).  
 SEQ ID NO 2244 : n represents 8 to 10 repeats of a (Location 21).  
 SEQ ID NO 2245 : n represents cacagtcac or deletion (Location 21).  
 SEQ ID NO 2246 : n represents tt or deletion (Location 21).  
 5 SEQ ID NO 2247 : n represents 10 to 12 repeats of a (Location 21).  
 SEQ ID NO 2248 : n represents c or deletion (Location 21).  
 SEQ ID NO 2249 : n represents 16 to 18 repeats of a (Location 21).  
 SEQ ID NO 2250 : n represents g (Location 21).  
 SEQ ID NO 2252 : n represents c or deletion (Location 21).  
 10 SEQ ID NO 2253 : n represents t or deletion (Location 21).  
 SEQ ID NO 2254 : n represents a or deletion (Location 21).  
 SEQ ID NO 2255 : n represents tg (Location 21).  
 SEQ ID NO 2257 : n represents 10 to 13 repeats of t (Location 21).  
 SEQ ID NO 2258 : n represents 11 to 13 repeats of gt (Location 21).  
 15 SEQ ID NO 2259 : n represents a or deletion (Location 21).  
 SEQ ID NO 2260 : n represents g or deletion (Location 21).  
 SEQ ID NO 2261 : n represents g or deletion (Location 21).  
 SEQ ID NO 2262 : n represents 9 to 11 repeats of t (Location 21).  
 SEQ ID NO 2263 : n represents g (Location 21).  
 20 SEQ ID NO 2265 : n represents tt or deletion (Location 21).  
 SEQ ID NO 2266 : n represents 7 to 9 repeats of a (Location 21).  
 SEQ ID NO 2267 : n represents 9 to 11 repeats of t (Location 21).  
 SEQ ID NO 2268 : n represents 9 to 10 repeats of a (Location 21).  
 SEQ ID NO 2269 : n represents gt or deletion (Location 21).  
 25 SEQ ID NO 2270 : n represents a or deletion (Location 21).  
 SEQ ID NO 2271 : n represents t (Location 21).  
 SEQ ID NO 2273 : n represents a or deletion (Location 21).  
 SEQ ID NO 2274 : n represents ct or deletion (Location 21).  
 SEQ ID NO 2275 : n represents g or deletion (Location 21).  
 30 SEQ ID NO 2276 : n represents a or deletion (Location 21).  
 SEQ ID NO 2277 : n represents a or deletion (Location 21).  
 SEQ ID NO 2278 : n represents a or deletion (Location 21).  
 SEQ ID NO 2279 : n represents c or deletion (Location 21).  
 SEQ ID NO 2280 : n represents aaag or deletion (Location 21).  
 35 SEQ ID NO 2348 : n represents 22 to 26 repeats of t (Location 21).

- SEQ ID NO 2349 : n represents 8 to 10 repeats of g (Location 21).
- SEQ ID NO 2350 : n represents 6 to 7 repeats of c (Location 21).
- SEQ ID NO 2351 : n represents 12 to 14 repeats of a (Location 21).
- SEQ ID NO 2427 : n represents caccaggcagcagactctgatgaggaggggaggggg (Location 21).
- 5 SEQ ID NO 2429 : n represents g (Location 21).
- SEQ ID NO 2474 : n represents tcac or deletion (Location 21).
- SEQ ID NO 2475 : n represents t or deletion (Location 21).
- SEQ ID NO 2476 : n represents 9 to 11 repeats of t (Location 21).
- SEQ ID NO 2477 : n represents 7 to 8 repeats of a (Location 21).
- 10 SEQ ID NO 2495 : n represents 13 to 16 repeats of t (Location 21).
- SEQ ID NO 2496 : n represents 9 to 10 repeats of t (Location 21).
- SEQ ID NO 2497 : n represents 14 to 16 repeats of t (Location 21).
- SEQ ID NO 2498 : n represents 13 to 17 repeats of t (Location 21).
- SEQ ID NO 2499 : n represents t (Location 21).
- 15 SEQ ID NO 2501 : n represents 8 to 9 repeats of a (Location 21).
- SEQ ID NO 2502 : n represents 8 to 9 repeats of t (Location 21).
- SEQ ID NO 2503 : n represents gcagtattactgtagt or deletion (Location 21).
- SEQ ID NO 2504 : n represents 13 to 14 repeats of t (Location 21).
- SEQ ID NO 2505 : n represents 9 to 10 repeats of t (Location 21).
- 20 SEQ ID NO 2506 : n represents 10 to 11 repeats of t (Location 21).
- SEQ ID NO 2524 : n represents t or deletion (Location 21).
- SEQ ID NO 2525 : n represents 12 to 15 repeats of t (Location 21).
- SEQ ID NO 2586 : n represents a or deletion (Location 21).
- SEQ ID NO 2587 : n represents at or deletion (Location 21).
- 25 SEQ ID NO 2594 : n represents t or deletion (Location 21).
- SEQ ID NO 2595 : n represents ttc or deletion (Location 21).
- SEQ ID NO 2606 : n represents ctt (Location 21).
- SEQ ID NO 2651 : n represents 9 to 11 repeats of c (Location 21).
- SEQ ID NO 2652 : n represents 15 to 21 repeats of a (Location 21).
- 30 SEQ ID NO 2653 : n represents ggggtggcggggtggg or deletion (Location 21).
- SEQ ID NO 2654 : n represents t or deletion (Location 21).
- SEQ ID NO 2655 : n represents a (Location 21).
- SEQ ID NO 2657 : n represents a or deletion (Location 21).
- SEQ ID NO 2658 : n represents 10 to 12 repeats of t (Location 21).
- 35 SEQ ID NO 2659 : n represents tt (Location 21).

- SEQ ID NO 2661 : n represents tcctccttgaagctgacgt or deletion (Location 21).
- SEQ ID NO 2662 : n represents 12 to 18 repeats of ca (Location 21).
- SEQ ID NO 2685 : n represents 18 to 20 repeats of a (Location 21).
- SEQ ID NO 2686 : n represents aa (Location 21).
- 5 SEQ ID NO 2688 : n represents t or deletion (Location 21).
- SEQ ID NO 2689 : n represents 9 to 13 repeats of t (Location 21).
- SEQ ID NO 2690 : n represents aa or deletion (Location 21).
- SEQ ID NO 2691 : n represents ttgaca or gtccaatat (Location 21).
- SEQ ID NO 2692 : n represents cta or deletion (Location 21).
- 10 SEQ ID NO 2693 : n represents 9 to 10 repeats of t (Location 21).
- SEQ ID NO 2694 : n represents gagatgtgtggctcacat (Location 21).
- SEQ ID NO 2696 : n represents cc or deletion (Location 21).
- SEQ ID NO 2697 : n represents act or deletion (Location 21).
- SEQ ID NO 2755 : n represents tat or deletion (Location 21).
- 15 SEQ ID NO 2756 : n represents 14 to 17 repeats of ac (Location 21).
- SEQ ID NO 2757 : n represents 16 to 27 repeats of a (Location 21).
- SEQ ID NO 2758 : n represents t or deletion (Location 21).
- SEQ ID NO 2759 : n represents 8 to 10 repeats of a (Location 21).
- SEQ ID NO 2760 : n represents 9 to 11 repeats of gt (Location 21).
- 20 SEQ ID NO 2761 : n represents aa or deletion (Location 21).
- SEQ ID NO 2762 : n represents t or deletion (Location 21).
- SEQ ID NO 2763 : n represents 8 to 12 repeats of ac (Location 21).
- SEQ ID NO 2764 : n represents a or deletion (Location 21).
- SEQ ID NO 2810 : n represents a (Location 21).
- 25 SEQ ID NO 2812 : n represents aa or deletion (Location 21).
- SEQ ID NO 2813 : n represents ca or deletion (Location 21).
- SEQ ID NO 2814 : n represents t or deletion (Location 21).
- SEQ ID NO 2815 : n represents tgtgtg or deletion (Location 21).
- SEQ ID NO 2912 : n represents a (Location 21).
- 30 SEQ ID NO 2914 : n represents g (Location 21).
- SEQ ID NO 2916 : n represents actt or deletion (Location 21).
- SEQ ID NO 2917 : n represents ttta or deletion (Location 21).
- SEQ ID NO 2918 : n represents 11 to 13 repeats of a (Location 21).
- SEQ ID NO 2919 : n represents 8 to 10 repeats of t (Location 21).
- 35 SEQ ID NO 2920 : n represents 12 to 14 repeats of a (Location 21).



- SEQ ID NO 2921 : n represents ctgta or deletion (Location 21).  
 SEQ ID NO 2922 : n represents 9 to 10 repeats of a (Location 21).  
 SEQ ID NO 2923 : n represents ctt or deletion (Location 21).  
 SEQ ID NO 2924 : n represents ctt (Location 21).  
 5 SEQ ID NO 2926 : n represents a or deletion (Location 21).  
 SEQ ID NO 2927 : n represents 9 to 11 repeats of a (Location 21).  
 SEQ ID NO 2928 : n represents tgt or deletion (Location 21).  
 SEQ ID NO 2929 : n represents 24 to 27 repeats of a (Location 21).  
 SEQ ID NO 2930 : n represents 10 to 21 repeats of ta (Location 21).  
 10 SEQ ID NO 2931 : n represents 8 to 10 repeats of a (Location 21).  
 SEQ ID NO 2932 : n represents 11 to 13 repeats of a (Location 21).  
 SEQ ID NO 2933 : n represents 8 to 10 repeats of a (Location 21).  
 SEQ ID NO 2999 : n represents tacc or deletion (Location 21).  
 SEQ ID NO 3000 : n represents attacttggtatctg or deletion (Location 21).  
 15 SEQ ID NO 3001 : n represents ttta or deletion (Location 21).  
 SEQ ID NO 3002 : n represents t (Location 21).  
 SEQ ID NO 3004 : n represents g or deletion (Location 21).  
 SEQ ID NO 3005 : n represents a or deletion (Location 21).  
 SEQ ID NO 3006 : n represents 9 to 11 repeats of a (Location 21).  
 20 SEQ ID NO 3007 : n represents g or deletion (Location 21).  
 SEQ ID NO 3008 : n represents 4 to 5 repeats of at (Location 21).  
 SEQ ID NO 3009 : n represents 7 to 8 repeats of t (Location 21).  
 SEQ ID NO 3010 : n represents 19 to 23 repeats of t (Location 21).  
 SEQ ID NO 3011 : n represents t or deletion (Location 21).  
 25 SEQ ID NO 3012 : n represents tgat or deletion (Location 21).  
 SEQ ID NO 3013 : n represents 8 to 10 repeats of t (Location 21).  
 SEQ ID NO 3014 : n represents a or deletion (Location 21).  
 SEQ ID NO 3021 : n represents 13 to 15 repeats of a (Location 21).  
 SEQ ID NO 3022 : n represents 12 to 15 repeats of t (Location 21).  
 30 SEQ ID NO 3042 : n represents g (Location 21).  
 SEQ ID NO 3044 : n represents a or deletion (Location 21).  
 SEQ ID NO 3046 : n represents g or deletion (Location 21).  
 SEQ ID NO 3047 : n represents 11 to 13 repeats of t (Location 21).  
 SEQ ID NO 3049 : n represents a or deletion (Location 21).  
 35 SEQ ID NO 3051 : n represents 9 to 11 repeats of t (Location 21).

- SEQ ID NO 3054 : n represents t or deletion (Location 21).  
 SEQ ID NO 3056 : n represents t or deletion (Location 21).  
 SEQ ID NO 3060 : n represents t or deletion (Location 21).  
 SEQ ID NO 3065 : n represents aaga (Location 21).  
 5 SEQ ID NO 3069 : n represents aaaa or deletion (Location 21).  
 SEQ ID NO 3073 : n represents 9 to 11 repeats of t (Location 21).  
 SEQ ID NO 3081 : n represents a or deletion (Location 21).  
 SEQ ID NO 3103 : n represents 11 to 13 repeats of t (Location 21).  
 SEQ ID NO 3119 : n represents acta (Location 21).  
 10 SEQ ID NO 3125 : n represents gtg or deletion (Location 21).  
 SEQ ID NO 3130 : n represents 11 to 12 repeats of t (Location 21).  
 SEQ ID NO 3140 : n represents tta or deletion (Location 21).  
 SEQ ID NO 3154 : n represents g (Location 21).  
 SEQ ID NO 3156 : n represents a (Location 21).  
 15 SEQ ID NO 3158 : n represents cct or deletion (Location 21).  
 SEQ ID NO 3169 : n represents gga (Location 21).  
 SEQ ID NO 3179 : n represents 12 to 14 repeats of t (Location 21).  
 SEQ ID NO 3184 : n represents 16 to 17 repeats of t (Location 21).  
 SEQ ID NO 3196 : n represents g (Location 21).  
 20 SEQ ID NO 3273 : n represents ag (Location 21).  
 SEQ ID NO 3306 : n represents g (Location 21).  
 SEQ ID NO 3310 : n represents c (Location 21).  
 SEQ ID NO 3315 : n represents ct or deletion (Location 21).  
 SEQ ID NO 3317 : n represents gc or deletion (Location 21).  
 25 SEQ ID NO 3352 : n represents 8 to 11 repeats of t (Location 21).  
 SEQ ID NO 3355 : n represents a (Location 21).  
 SEQ ID NO 3358 : n represents t or deletion (Location 21).

### 30 [Brief Description of Drawings]

Figure 1 shows TaqMan probes.

Figure 2 represents an outline of the TaqMan PCR method.

Figure 3 shows probes labeled with fluorescent dyes.

Figure 4 shows an outline of the INVADER assay.

35 Figure 5 shows a FRET probe.

Figure 6 shows an outline of the INVADER assay.

Figure 7 shows a probe in which the allele does not match the probe.

Figure 8 shows one embodiment of allele identification using a ligation reaction.

Figure 9 shows a structure of ATP-binding cassette subfamily B member 2 (ABCB2) gene and the SNP location therein.

Figure 10 shows a structure of ATP-binding cassette subfamily B member 4 (ABCB4) gene and the SNP location therein.

Figure 11 shows a structure of microsomal epoxide hydrolase 1 (EPHX1) gene and the SNP location therein.

Figure 12 shows a structure of cytoplasmic epoxide hydrolase (EPHX2) gene and the SNP location therein.

Figure 13 shows a structure of guanidinoacetate N-methyl transferase (GAMT) gene and the SNP location therein.

Figure 14 shows a structure of nicotinamide N-methyl transferase (NNMT) gene and the SNP location therein.

Figure 15 shows a structure of phenyl ethanolamine N-methyl transferase (PNMT) gene and the SNP location therein.

Figure 16 shows a structure of phosphatidylethanolamine N-methyl transferase (PEMT) gene and the SNP location therein.

Figure 17 shows a structure of glutathione S transferase 3 (GSTM3) gene and the SNP location therein.

Figure 18 shows a structure of aldehyde dehydrogenase 5 (ALDH5) gene and the SNP location therein.

Figure 19 shows a structure of transglutaminase 1 (TGM1) gene and the SNP location therein.

Figure 20 shows a structure of gamma-glutamyl transferase 1 (GGT1) gene and the SNP location therein.

Figure 21 shows a structure of NAD (P)H: quinone oxidoreductase 1 (NQO1) gene and the SNP location therein.

Figure 22 shows a structure of p53-inducible gene 3 (PIG3) in a quinone oxidoreductase homolog and the SNP location therein.

Figure 23 shows a structure of NRH: quinone oxidoreductase 2 (NQO2) gene and the SNP location therein.

Figure 24 shows a structure of sulfotransferase 1A1 (SULT1A1/STP1) gene and the SNP location therein.

Figure 25 shows a structure of sulfotransferase 1A2 (SULT1A2/STP2) gene and the SNP location therein.

Figure 26 shows a structure of sulfotransferase-associated protein 3 (SULTX3) gene and the SNP location therein.

5        Figure 27 shows a structure of tyrosyl protein sulfotransferase 1 (TPST1) gene and the SNP location therein.

Figure 28 shows a structure of tyrosyl protein sulfotransferase 2 (TPST2) gene and the SNP location therein.

10       Figure 29 shows a structure of sulfotransferase 1A3 (SULT1A3/STM/HAST) gene and the SNP location therein.

Figure 30 shows a structure of cerebroside sulfotransferase (CST) gene and the SNP location therein.

Figure 31 shows a structure of sulfotransferase 1C1 (SULT1C1) gene and the SNP location therein.

15       Figure 32 shows a structure of sulfotransferase 1C2 (SULT1C2) gene and the SNP location therein.

Figure 33 shows a structure of thyroid hormone sulfotransferase (ST1B2) gene and the SNP location therein.

20       Figure 34 shows a structure of carbohydrate sulfotransferase 2 (CHST2) gene and the SNP location therein.

Figure 35 shows a structure of sulfotransferase 2A1 (SULT2A1) gene and the SNP location therein.

Figure 36 shows a structure of sulfotransferase 2B1 (SULT2B1) gene and the SNP location therein.

25       Figure 37 shows a structure of carbohydrate sulfotransferase 4 (CHST4) gene and the SNP location therein.

Figure 38 shows a structure of carbohydrate sulfotransferase 5 (CHST5) gene and the SNP location therein.

30       Figure 39 shows a structure of HNK-sulfotransferase (HNK-1ST) gene and the SNP location therein.

Figure 40 shows a structure of estrogen sulfotransferase (STE) gene and the SNP location therein.

Figure 41 shows a structure of alcohol dehydrogenase 1 (ADH1) gene and the SNP location therein.

35       Figure 42 shows a structure of alcohol dehydrogenase 2 (ADH2) gene and the SNP

location therein.

Figure 43 shows a structure of alcohol dehydrogenase 3 (ADH3) gene and the SNP location therein.

Figure 44 shows a structure of alcohol dehydrogenase 6 (ADH6) gene and the SNP location therein.

Figure 45 shows a structure of alcohol dehydrogenase 7 (ADH7) gene and the SNP location therein.

Figure 46 shows a structure of short-chain alcohol dehydrogenase family gene (HEP27) and the SNP location therein.

Figure 47 shows a structure of L1 cell adhesion molecule (L1CAM) gene and the SNP location therein.

Figure 48 shows a structure of arylalkylamine N-acetyltransferase (AANAT) gene and the SNP location therein.

Figure 49 shows a structure of N-acetyltransferase homolog (ARD1) gene of *Saccharomyces cerevisiae* and the SNP location therein.

Figure 50 shows a structure of N-acetyltransferase (NAT1) gene and the SNP location therein.

Figure 51 shows a structure of N-acetyltransferase 2 (NAT2) gene and the SNP location therein.

Figure 52 shows a structure of granzyme A (GZMA) gene and the SNP location therein.

Figure 53 shows a structure of granzyme B (GZMB) gene and the SNP location therein.

Figure 54 shows a structure of esterase D/formylglutathione hydrolase (ESD) gene and the SNP location therein.

Figure 55 shows a structure of dolichyl-diphosphooligosaccharide-protein glycosyltransferase (DDOST) gene and the SNP location therein.

Figure 56 shows a structure of microsomal glutathione S transferase 1 (MGST1) gene and the SNP location therein.

Figure 57 shows a structure of alcohol dehydrogenase 5 (ADH5) gene and the SNP location therein.

Figure 58 shows a structure of glutathione S transferase M1 (GSTM1) gene and the SNP location therein.

Figure 59 shows a structure of glutathione S transferase M2 (GSTM2) gene and the SNP location therein.

Figure 60 shows a structure of glutathione S transferase M4 (GSTM4) gene and the SNP location therein.

Figure 61 shows a structure of glutathione S transferase Z1 (GSTZ1) gene and the SNP location therein.

5        Figure 62 shows a structure of glutathione S transferase Pi (GSTPi) gene and the SNP location therein.

Figure 63 shows a structure of glutathione S transferase T1 (GSTT1) gene and the SNP location therein.

10       Figure 64 shows a structure of microsomal glutathione S transferase 1-like 1 (MGST1L1) gene and the SNP location therein.

Figure 65 shows a structure of microsomal glutathione S transferase T2 (MGST2) gene and the SNP location therein.

Figure 66 shows a structure of microsomal glutathione S transferase T3 (MGST3) gene and the SNP location therein.

15       Figure 67 shows a structure of glutathione S transferase A1 (GSTA1) gene and the SNP location therein.

Figure 68 shows a structure of glutathione S transferase A4 (GSTA4) gene and the SNP location therein.

20       Figure 69 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 1 (NDUFA1) gene and the SNP location therein.

Figure 70 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 2 (NDUFA2) gene and the SNP location therein.

Figure 71 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 3 (NDUFA3) gene and the SNP location therein.

25       Figure 72 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 5 (NDUFA5) gene and the SNP location therein.

Figure 73 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 6 (NDUFA6) gene and the SNP location therein.

30       Figure 74 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 7 (NDUFA7) gene and the SNP location therein.

Figure 75 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 8 (NDUFA8) gene and the SNP location therein.

Figure 76 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ / $\beta$  subcomplex 1 (NDUFAB1) gene and the SNP location therein.

35       Figure 77 shows a structure of NADH-ubiquinone oxidoreductase 1 $\alpha$ -subcomplex 9

(NDUFA9) gene and the SNP location therein.

Figure 78 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 1 (NDUFS1) gene and the SNP location therein.

Figure 79 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 3 (NDUFS3) gene and the SNP location therein.

Figure 80 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 4 (NDUFS4) gene and the SNP location therein.

Figure 81 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 5 (NDUFS5) gene and the SNP location therein.

Figure 82 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 6 (NDUFS6) gene and the SNP location therein.

Figure 83 shows a structure of NADH-ubiquinone oxidoreductase Fe-S protein 8 (NDUFS8) gene and the SNP location therein.

Figure 84 shows a structure of NADH-ubiquinone oxidoreductase 1 $\beta$ -subcomplex 3 (NDUFB3) gene and the SNP location therein.

Figure 85 shows a structure of NADH-ubiquinone oxidoreductase 1 $\beta$ -subcomplex 5 (NDUFB5) gene and the SNP location therein.

Figure 86 shows a structure of NADH-ubiquinone oxidoreductase 1 $\beta$ -subcomplex 7 (NDUFB7) gene and the SNP location therein.

Figure 87 shows a structure of ATP-binding cassette subfamily A member 1 (ABCA1) gene and the SNP location therein.

Figure 88 shows a structure of catechol-O-methyl transferase (COMT) gene and the SNP location therein.

Figure 89 shows a structure of histamine N-methyl transferase (HNMT) gene and the SNP location therein.

Figure 90 shows a structure of cytochrome P450 subfamily 1 (aromatic compound-inducible) polypeptide 1 (CYP1A1) gene and the SNP location therein.

Figure 91 shows a structure of cytochrome P450 subfamily 1 (aromatic compound-inducible) polypeptide 2 (CYP1A2) gene and the SNP location therein.

Figure 92 shows a structure of cytochrome P450 subfamily 1 (dioxin-inducible) polypeptide 1 (CYP1B1) gene and the SNP location therein.

Figure 93 shows a structure of allylacetamide deacetylase (AADAC) gene and the SNP location therein.

Figure 94 shows a structure of neuropathy target esterase (NTE) gene and the SNP location therein.

Figure 95 shows a structure of ATP-binding cassette subfamily C (CTFR/MRP) member 2 gene and the SNP location therein.

Figure 96 shows a structure of ATP-binding cassette subfamily B member 1 (ABCB1) gene and the SNP location therein.

5 Figure 97 shows a structure of ATP-binding cassette subfamily B member 3 (ABCB3) gene and the SNP location therein.

Figure 98 shows a structure of ATP-binding cassette subfamily B member 7 (ABCB7) gene and the SNP location therein.

10 Figure 99 shows a structure of ATP-binding cassette subfamily B member 8 (ABCB8) gene and the SNP location therein.

Figure 100 shows a structure of ATP-binding cassette subfamily B member 9 (ABCB9) gene and the SNP location therein.

Figure 101 shows a structure of ATP-binding cassette subfamily B member 10 (ABCB10) gene and the SNP location therein.

15 Figure 102 shows a structure of ATP-binding cassette subfamily B member 11 (ABCB11) gene and the SNP location therein.

Figure 103 shows a structure of cytochrome P450 subfamily IVB polypeptide 1 (CYP4B1) gene and the SNP location therein.

20 Figure 104 shows a structure of cytochrome P450 subfamily XXVIIA polypeptide 1 (CYP27A1) gene and the SNP location therein.

Figure 105 shows a structure of cytochrome P450 subfamily IVF polypeptide 2 (CYP4F2) gene and the SNP location therein.

Figure 106 shows a structure of cytochrome P450 subfamily 4F polypeptide 3 (CYP4F3) gene and the SNP location therein.

25 Figure 107 shows a structure of cytochrome P450 subfamily 4F polypeptide 8 (CYP4F8) gene and the SNP location therein.

Figure 108 shows a structure of aldehyde dehydrogenase 1 (ALDH1) gene and the SNP location therein.

30 Figure 109 shows a structure of aldehyde dehydrogenase 2 (ALDH2) gene and the SNP location therein.

Figure 110 shows a structure of aldehyde dehydrogenase 7 (ALDH7) gene and the SNP location therein.

Figure 111 shows a structure of aldehyde dehydrogenase 8 (ALDH8) gene and the SNP location therein.

35 Figure 112 shows a structure of aldehyde dehydrogenase 9 (ALDH9) gene and the



SNP location therein.

Figure 113 shows a structure of aldehyde dehydrogenase 10 (ALDH10) gene and the SNP location therein.

Figure 114 shows a structure of ATP-binding cassette subfamily C member 7 (ABCC7) gene and the SNP location therein.

Figure 115 shows a structure of ATP-binding cassette subfamily C member 8 (ABCC8) gene and the SNP location therein.

Figure 116 shows a structure of ATP-binding cassette subfamily C member 9 (ABCC9) gene and the SNP location therein.

Figure 117 shows a structure of carboxyl esterase 1 (CES1) gene and the SNP location therein

Figure 118 shows a structure of ATP-binding cassette subfamily A member 4 (ABCA4) gene and the SNP location therein.

Figure 119 shows a structure of ATP-binding cassette subfamily A member 7 (ABCA7) gene and the SNP location therein.

Figure 120 shows a structure of ATP-binding cassette subfamily G member 1 (ABCG1) gene and the SNP location therein.

Figure 121 shows a structure of ATP-binding cassette subfamily G member 2 (ABCG2) gene and the SNP location therein.

Figure 122 shows a structure of ATP-binding cassette subfamily G member 4 (ABCG4) gene and the SNP location therein.

Figure 123 shows a structure of ATP-binding cassette subfamily E member 1 (ABCE1) gene and the SNP location therein.

Figure 124 shows a structure of carbohydrate sulfotransferase 1 (CHST1) gene and the SNP location therein.

Figure 125 shows a structure of carbohydrate sulfotransferase 3 (CHST3) gene and the SNP location therein.

Figure 126 shows a structure of NADH: ubiquinone dehydrogenase flavoprotein 1 (NDUFV1) gene and the SNP location therein.

Figure 127 shows a structure of NADH: ubiquinone oxidoreductase flavoprotein 2 (NDUFV2) gene and the SNP location therein.

Figure 128 shows a structure of NADH: ubiquinone oxidoreductase flavoprotein 3 (NDUFV3) gene and the SNP location therein.

Figure 129 shows a structure of NADH: ubiquinone oxidoreductase A10 (NDUFV10) gene and the SNP location therein.

Figure 130 shows a structure of high-mobility group protein 17-like 1 (HMG17L1) gene and the SNP location therein.

Figure 131 shows a structure of UDP glycosyltransferase 2 family polypeptide A1 (UGT2A1) gene and the SNP location therein.

5        Figure 132 shows a structure of human organic anion transporter polypeptide 1 (hOATP1) gene and the SNP location therein.

Figure 133 shows a structure of human organic anion transporter polypeptide 2 (hOATP2) gene and the SNP location therein.

10       Figure 134 shows a structure of human organic anion transporter polypeptide 8 (hOATP8) gene and the SNP location therein.

Figure 135 shows a structure of human organic anion transporter 1 (hOAT1) gene and the SNP location therein.

Figure 136 shows a structure of human organic anion transporter 2 (hOAT2) gene and the SNP location therein.

15       Figure 137 shows a structure of human organic anion transporter 3 (hOAT3) gene and the SNP location therein.

Figure 138 shows a structure of aldehyde dehydrogenase 1 family member A2 (ALDH1A2) gene and the SNP location therein.

20       Figure 139 shows a structure of aldehyde dehydrogenase 1 family member A3 (ALDH1A3) gene and the SNP location therein.

Figure 140 shows a structure of formyl tetrahydrofolate dehydrogenase (FTHFD/ALDH1L1) gene and the SNP location therein.

Figure 141 shows a structure of cytochrome P450 subfamily IIIA (aromatic compound-inducible) polypeptide 4 (CYP3A4) gene and the SNP location therein.

25       Figure 142 shows a result of typing performed on two different groups of patients using the INVADER method.

[Abstract]

[Problem]

The present invention provides a method for detecting a genetic polymorphism(s).

[Means for solving the problems]

- 5 A method for detecting a genetic polymorphism(s), comprising creating oligonucleotide probes and/or oligonucleotide primers so that the probes and/or primers contain a polymorphic site(s) present in a gene encoding a drug metabolizing enzyme or so that the polymorphic site(s) is/are contained in the amplified fragment when at least one of said gene encoding the drug metabolizing enzyme is amplified; and detecting at least one genetic
- 10 polymorphism in a gene of a subject encoding the drug metabolizing enzyme using the resultant oligonucleotide probes and/or oligonucleotide primers.

[Representative drawing] none

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABC82	1	5' flanking - 673	agctaagagtcacaaagcacc G/C cttttccaccagcctcg	1
ABC82	2	5' flanking - 646	ccaccagcctcgctgcctg T/G tcccttcacggacactctag	2
ABC82	3	5' flanking - 563	ttgcaagcgtgctgctac A/C ggcgacctccctcgctccc	3
ABC82	4	5' flanking - 236	gctttgcgcgcgcgcctaac G/T tgtgtaggcgagatcgccc	4
ABC82	5	Intron3 + 408	aaggaaactgaggccaagac C/T ctaaatgctgaactgcaca	5
ABC82	6	Exon4 + 153	ccctcaccatggctaccctg A/G tcacctgacctgtcttttc	6
ABC82	7	Intron4 + 289	gtattcttttagcatccaag G/T ggcatagtctgtctctttc	7
ABC82	8	Intron4 + 291	atttcttttagcatccaagg G/G catagctgtgtctcttttc	8
ABC82	9	Intron5 - 63	ttccttcaggtttaagtactg C/T ggttctttgtgtccctcca	9
ABC82	10	Intron7 - 185	gtctctgcccctgtctttgc C/T gcttctctatctctactcc	10
ABC82	11	3' flanking + 71	agcgcaacttttcagctgcgg G/A tctctctcttttatctacc	11
ABC82	12	3' flanking + 129	aactgcatcacctttttccct T/C aagcttttttaattcctatga	12
ABC82	13	3' flanking + 459	cattcaggaggcccaagctc G/A tgtgacgtgcagctgtctg	13
ABC84	1	exon3 + 3	aacaccttattttatagat C/T caatgactgagtcagaatt	14
ABC84	2	intron3 + 45	cagcatctctactatatacca T/C gctctgctttaagggttctct	15
ABC84	3	intron3 + 498	actcaaatagggtgtaggag C/T agagacaattcaatacagac	16
ABC84	4	intron3 + 515	gagcagagacaattcaatc A/G gacagaagctttagatgaga	17
ABC84	5	intron6 + 1030	tagttttgcatgtagaatt G/C aaaaagttagatagatgtgtt	18
ABC84	6	intron6 + 1437	gttaagcctgcttcaatcaa G/A ttagtatatcttctgttcta	19
ABC84	7	intron6 + 2449	ttgacttagcgacactgtta G/A catacttatctttcctgtgt	20
ABC84	8	intron7 + 451	ccttgcgcacctgtctgt A/C taagtttgctttattatagt	21
ABC84	9	intron7 + 530	agtagagacagcgtggcgat C/G acacgggacagagctaactg	22
ABC84	10	intron7 - 152	aacagaatcatgaanaataag T/C tgttaatgattgaaggcct	23
ABC84	11	exon8 + 40	aggataaattgtttatgtcg C/T ctgggtaccatcatggccat	24
ABC84	12	intron8 + 130	ctggttagctccagatatca T/C agaaggagtgtgaaaattct	25
ABC84	13	intron8 + 248	aatacacaggaagcttctaa A/G taagtaagggaagtcactct	26
ABC84	14	intron8 + 531	ctaaagagtgaaatggattca A/G tagtctccctgggaactcacc	27
ABC84	15	intron8 + 4240	ctgaggttccagcttatctc T/A tagagatgtttacttagtct	28
ABC84	16	intron8 + 4343	tgtagaagaaaaaaggtt C/T atattacaagggtctgac	29
ABC84	17	intron8 + 4677	cccaagatatcttcaatact G/C tccatagtgcttaggggtcc	30
ABC84	18	intron9 + 113	tttaccagattcacctatt A/G ttatcattttgtctccaaa	31
ABC84	19	intron9 + 982	tgctctatcacgtttttgtt T/A taagttttagtaaatgtatta	32
ABC84	20	intron11 + 457	tccagcttgggtgacagagt A/G agacttcatctcaaaaaaaa	33
ABC84	21	intron11 + 1337	tactcttggggagcctatca C/G cagggtgggtcagatatagc	34
ABC84	22	exon12 + 3	tggttctttctgtccagat A/T ctctcgccatttagtgaaa	35
ABC84	23	intron12 + 1288	cagaccacactaacctcag T/C tggacctcaggatgtcagtg	36
ABC84	24	intron13 + 206	tgtagaagaagaaatagcat G/A tggtagaccatttggaaa	37
ABC84	25	intron13 + 988	cagtcggttgggaagcttgc T/C accctttcttctacattcctca	38
ABC84	26	intron13 + (1413-1414)	tttatcttctacttatgttt (T) ctgagtttaagttaagtata	39
ABC84	26	intron13 + (1413-1414)	tttatcttctacttatgttt ctgagtttaagttaagtata	40
ABC84	27	intron13 + 1931	cttgcaaatgttgccttccc A/G caaaaaaaaggaagagat	41
ABC84	28	intron23 + 784	agtatcttctaaactcttgc T/C atgcaggaaaaattatttta	42
ABC84	29	intron25 + 158	gaaatattttactgtatata T/C gcttagaacttaataataag	43
ABC84	30	intron25 + 2920	ctgagcttctctatcatct T/A ttccattctcctggatgctgt	44
ABC84	31	intron29 + 411	cttctcttacccttgaattct A/C ggcctctcgaactttgacttt	45
ABC84	32	intron32 + 458	agaaaaatgaattgccctac T/C gagctaactctgaaagaca	46
EPHX1	1	intron1 + 110	tgcanaatgtgtcttactag C/T ttctagtgcataaatttg	47
EPHX1	2	intron1 + 143	aaatattgttggagctcttc G/A ctgtgtcgggccaagtcacca	48
EPHX1	3	intron1 + 1097	aatccagagagggagataga T/G tggagttcaagggtggaca	49
EPHX1	4	intron1 + 1717	ttccaagacagagcgagggg T/C gctcgtggggcgtggtttgc	50
EPHX1	5	intron1 + 1772	aactcgatgctttctctccc G/T tctgggtcttaactgcagtg	51
EPHX1	6	intron1 + 2054	gaaatgtaacaggcaacact A/G tggacacagaaagtagatta	52
EPHX1	7	intron2 + 1414	atttccaaaatctgttttgg G/T gtaactgaaacacttgggaa	53
EPHX1	8	exon3 + 174	tacctcacttcaagactaa G/A attgaaggtatgtttgcaaa	54
EPHX1	9	intron3 + 6583	ctgtcaataaccatgaagggg G/C ggcggggcactaagggtgg	55
EPHX1	10	intron4 + 34	agaggttccataactgcccc G/A tccctgccaaagggtggccc	56
EPHX1	11	intron4 + 63	aagggttggcccggtgttcc C/T accaggctctccttccggcg	57
EPHX1	12	intron5 + 154	gcagtcctgaggcagcttg G/A ctggatctcctctgtctgta	58
EPHX1	13	intron5 + 276	tgctggaccaagctctggga T/C agccctgagcagaactcccc	59
EPHX1	14	exon6 + 130	gatgtggagctgctgtacc C/T gtcaaggagaaggatttcta	60
EPHX1	15	intron8 + 206	ggctcctggctcccgggcg G/A cctcagttaccgtcccccagt	61
EPHX1	16	intron8 + 353	tggccctccagaaaaagaga A/G ggcctcagtgaggggagag	62
EPHX1	17	3' flanking + 708	aggtcagactcatgcactc A/G gccctgaagggtgagagag	63
EPHX2	1	5' flanking - (523-522)	aaagtcactggatagcccc (C) tcccccccccccaacacgg	64
EPHX2	1	5' flanking - (523-522)	aaagtcactggatagcccc tcccccccccccaacacgg	65
EPHX2	2	5' flanking - 522	aaagtcactggatagcccc T/C ccccccccccccaacacgg	66
EPHX2	3	5' flanking - 521	aaagtcactggatagcccc C/T ccccccccccccaacacgg	67
EPHX2	4	5' flanking - 516	actggatagcccccccc G/C ccccccaacacggcttatg	68
EPHX2	5	5' flanking - 515	ctggatagcccccccc G/C ccccccaacacggcttatg	69
EPHX2	6	Intron1 - 74	tggtgctttctcaatgaata T/C gaacagtgtctgtttccatg	70
EPHX2	7	Intron3 + 72	gagcattaggtcagaatcca T/C tgaagtgtctgtttgagatca	71
EPHX2	8	Intron4 + 473	gtgtgtctctacttttaact A/G caaaaggtgattgaatggag	72
EPHX2	9	Intron5 + 276	caagagtggtgattgtaacg C/T catcctgacctcacttttga	73
EPHX2	10	Intron8 + 8	tctgtctctcccggtgggt T/C gctgtcttgacgtgtcttta	74
EPHX2	11	Intron9 + 1573	atgtcgtgaagactgatgaa C/T gatggcggctgcactgctc	75
EPHX2	12	Intron10 + 207	gaacagatggagatgagct T/C gttatttgtcttttaatga	76
EPHX2	13	Intron12 + 911	tgaagagacctcgacatgtc G/T catccacatactacagga	77
EPHX2	14	Intron12 + 2425	atcttctcagctgagcaaac C/T gaggtcagagggttaacc	78
EPHX2	15	Intron12 + 2460	ttacccccactggcccaag G/A ccaggtacatgattgggtca	79
EPHX2	16	Intron12 - 281	aagtcctttcaaggagattat T/C ataagtagtaccttctcatt	80
EPHX2	17	Intron12 - 268	agattattataagtagtacc T/G tctcattataggaattatga	81
EPHX2	18	Exon13 + 50	cctgagtcggactttcaaaa G/T cctcttcagagcaagcagtg	82
EPHX2	19	Intron13 + 1739	ttgtcgtaacagggttttca G/T atgagcatatttcttttga	83
EPHX2	20	Exon14 + 33	agcataaagtctgtgaagc G/A gtaagagacatgcttggga	84
EPHX2	21	Intron14 + 314	ggattgagagcttacctcta T/C ggggtcaccctcgtgtatgc	85
EPHX2	22	Intron14 + 878	attcccttattccttcacac C/T gctcgtcactcattcattca	86
EPHX2	23	Intron14 + 948	gcacaggctgggtatgaagc T/C gggcgtcagctcagctac	87

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
EPHX2	24	Intron15 + 259	agaggggttttcaactactttt C/T agtcatggctcctcagagaa	88
EPHX2	25	Intron16 + 459	tcctcatttgtcaagcagaa G/C atgagtttccaatctctggg	89
EPHX2	26	Intron16 + 645	gtaagtgaacacactgctac G/A tccagacttctcgtccagac	90
EPHX2	27	Intron16 + 985	gtcattatcatcatatgacc G/A atgaaaatgaccaactgca	91
EPHX2	28	3' flanking + 12	aggtggccttacacacatct T/C gcatggatggcagcattgtt	92
EPHX2	29	3' flanking + 374	tggtcacggagaatgcacgg C/T atggggatgaacctttccc	93
EPHX2	30	3' flanking + 544	tagccacctgctttctccc G/A gcttccctagcagatttgc	94
GANT	1	intron1 + 429	ctcggaaagctgagctcagg G/A agacagctgtcccgggggtg	95
GANT	2	3' flanking + 626	cactgacctccttgccctga G/A agaaggcggctcctgtgt	96
NNMT	1	5' flanking - 228	ataattttcctgacgagctc A/T agtgcctcctctggtctaca	97
NNMT	2	intron1 + 44	ccccactaatgtgagtcata T/C agatggagttctcaggccagc	98
NNMT	3	intron1 + 149	ggataaaaacgaattattgtt A/G tagcgattccacagtttaca	99
NNMT	4	intron2 + 158	agatagggcccatgtgtgtgc G/A ttttagtaaatgtgtatg	100
NNMT	5	intron2 + 433	gctgtagccatccagcccta T/C agaacttggctgtgagtgtg	101
NNMT	6	intron2 - 3064	atcctctgactggtaagttc C/T agttctgtgttaactcaagt	102
NNMT	7	intron2 - 260	atttcattggagggaagtcga T/C ggtagaagcaggctgtcagg	103
NNMT	8	3' flanking + 71	ggctcagtgtgttggggccca A/G tggttcatctaggacgggac	104
PNTT	1	5' flanking - 390	aagaggtgaatgctctcggg G/A ggtctggagagagagatggg	105
PENT	1	exon2 - 4	agctcagcagacctcctggc C/T gtgtgtgtgtgtccttttc	106
PENT	2	intron4 + 39	actgtccagacgggagttac C/T cactgtgtgtgtgagcccccac	107
PENT	3	intron4 + 1317	accgtcccccagctggcccca G/A cctcctgacatgggacctgtg	108
PENT	4	intron4 + 1355	ctggagccagctgcagccg A/C agtgcctggccatcctggcg	109
PENT	5	intron4 + 5925	gtccaggcactgtggcccta C/T gtggaggtctcagttccca	110
PENT	6	intron4 + 6028	ggcagtggtccaggaccag G/C atggactcctctttctcacc	111
PENT	7	intron4 + 6078	atctgtacctcgcggagctc C/T acctggcttctgtccatcac	112
PENT	8	intron4 + 6089	cgcggactctacctggcttc A/G tggcatcacccccgcagat	113
PENT	9	intron4 + 6379	tcagggttccctcctccatc A/C cctcctcacctgtccctctc	114
PENT	10	intron4 + 7339	tgttaaggaatcctgccaga C/T ggcagatgcacaggggtca	115
PENT	11	intron4 + 7619	ctcctgcacatgtgtccag A/G gaggaaaggcatttgacagg	116
PENT	12	intron4 + 8858	ggcatgtgtgtgtgtgtgt T/G gtgtgtgtgtgtgtgtgt	117
PENT	13	intron4 + 9029	tttttgaccagaaagcgtc G/A tctcttgcaggccctctgt	118
PENT	14	intron4 + 9056	gccaggccctcttgcacttg C/T gggaaagctgagctgagctg	119
PENT	15	intron4 + 9512	ctgagctgggcagcagcatt A/G ctctgtgtgtgtgtgtgt	120
PENT	16	intron4 + 9523	agcagcattactctgtgtgc T/C gctggcactggcctgtgtgg	121
PENT	17	intron4 + 9622	gacaaagtgtacaacaagg G/A tctcgaactgggtcagctca	122
PENT	18	intron4 + 10776	ccattctctgggtctcttctt G/A aggtctgaatgaattccatg	123
PENT	19	intron4 + 10912	tctgcccactttgtctcaga G/C gtgcaacaaggccttcagga	124
PENT	20	intron4 + 11590	ggacactggcctgatgcaga G/C gtgtgtgtctctctcctcag	125
PENT	21	intron4 + 12090	ggccaggccaccctaccag G/C ctgagtcaccctgtccagc	126
PENT	22	intron4 + 12263	taccggccttccagatgga G/A cggcgtgtcatgggactta	127
PENT	23	intron4 + 12448	tctgttccctctctctgtt G/A tagtttctgggttaaaatc	128
PENT	24	intron4 + 12730	tgggaccagtgccggccacca C/T ggcccaaggacgtgtgttc	129
PENT	25	intron4 + 13240	gggctccaggcacacagcgg T/C ccagtaacacctgtcgttt	130
PENT	26	intron4 + 13494	tccgtggaactcagagatgg T/C acctccctgcagggtggggc	131
PENT	27	intron4 + 13817	aaactcctccctgtctgtgag A/G cagatcttggagcctcggcc	132
PENT	28	intron4 + 14773	ccgcccctgtctctatgcc C/T ctatgcctctcactgcctgg	133
PENT	29	intron4 + 14951	gtcctgagggccctccacc G/A gagccttgggtgcccctaca	134
PENT	30	intron4 + 16896	gctgtgactgtcttggagac T/C ggtcttggcgggctgtgtg	135
PENT	31	intron4 + 19439	ccaggagcctctgagggcag G/A ggggcttctcaaccacacac	136
PENT	32	intron4 + 19559	attttgtcagcatgtcacgt C/T cctttcataatgaagcaagg	137
PENT	33	intron4 + 20051	acagcactgcgggagccagc A/G catctgcagacgcatttgat	138
PENT	34	intron4 + 20816	tggactctctggcgtccatc C/T agccacttcagtgccagctg	139
PENT	35	intron4 + 21196	ggctggctggccctgggag C/G atcgtgacaggctttagtgg	140
PENT	36	intron4 + 21528	acaggtgggagccggagctc G/T ggaggtggcgggctgagc	141
PENT	37	intron4 + 21596	ccgcttcccgtgtctctggc C/T gtacagaaagtgtccact	142
PENT	38	intron4 + 22672	agcctccactgccttcttgg C/T tggggggaggggcccgggtc	143
PENT	39	intron4 + 22713	tctaagcgtgtcttcttctt A/T ctgaaaaccaaacacctct	144
PENT	40	intron4 + 23010	tggcggcagcggggagggga G/A ggcaggtgttcccccaagt	145
PENT	41	intron4 + 23588	gtcaggcgccttgcacccc C/T gcagccaaagtcttggcggga	146
PENT	42	intron4 + 23627	gacactgccttgagccagga C/T ggtgaggtgggagccttcc	147
PENT	43	intron4 + 23941	tgagggttgggactctaca G/A agggaggtggactcacgggg	148
PENT	44	intron4 + 24091	gacaccttctcactgtcagc G/T ctgagacacggccttgcct	149
PENT	45	intron4 + 25348	caggccagttggaatcctac G/A tagagtgaagacatctcagc	150
PENT	46	intron4 + 25603	taagcagttaacactgatgc G/A tgatgaaatccaacagca	151
PENT	47	intron4 + 31540	ctccagggtggcaggaacac T/C gtgaggagcatgcaactgac	152
PENT	48	intron4 + 31637	gtgggtgggagccagggac G/A gtgagggtgttcaagggtgtg	153
PENT	49	intron4 + 31642	ctgggacgcccagggacgtga G/A gggcttcaagggtgtttgt	154
PENT	50	intron4 + 35593	ggaggagctgaagagctgg G/A gctcgggacaggtgttca	155
PENT	51	intron4 + 35647	actttgaggcaccaccgac C/A tgtccgtgcgtggggagac	156
PENT	52	intron4 + 35862	tccagtggtgtgtctgtcc C/T cgtctcagccgagcactcag	157
PENT	53	intron4 + 35882	ccgctctcagccgagcactca T/G cggccagggtgtgtgactc	158
PENT	54	intron4 + 37141	ccacaggccggatgaccttga T/C acttctcagctgcagggtgtg	159
PENT	55	intron4 + 38862	tggagagaccactcagaca C/G caaggcaggcgtatccatgg	160
PENT	56	intron4 + 38872	acctcagacagcaaggacgg G/T catgcatgggtcccggcag	161
PENT	57	intron4 + 39140	atgtctcaaatctccctccc C/T gggaaatcaggcagcaggtc	162
PENT	58	intron4 + 39635	caggcccaggagcaggtggg G/T cctcctcacaggagcagggc	163
PENT	59	intron4 + 39713	actctgagcatgctggctcc C/T tcttctttccaggcagca	164
PENT	60	intron4 + 40436	cctgtgtgtgtcttggaccc G/A gaggcagacagaggagcct	165
PENT	61	intron4 + 47485	acaatgactgttggagccct C/T gaggcagctgtgtcacgtgg	166
PENT	62	intron4 + 48131	actggggatcttgaatccc G/A cctcctgagtcagctggagc	167
PENT	63	intron4 + 48558	cacaggtgaactgttaggc C/G acagccacatcttgcggag	168
PENT	64	intron4 + 48702	gagatggggcggtttcggga G/A gcaaaagcagggaagcagaa	169
PENT	65	intron4 + 50302	gcattgtcatgggcagagcc T/C gtcccatctgagtggacc	170
PENT	66	intron4 + 54102	ggcccgctgtccttgcagcc A/T tgggctcctctggcagttct	171
PENT	67	intron4 + 54220	cccaggacagatcttctcc G/A ccagacgtctcttcttctcct	172
PENT	68	intron4 + 54371	gcagataatgtgcagctggg G/A tgcattgtgtgtgtctccc	173
PENT	69	exon5 + 79	tggcctgtactctctaagc G/C tcaacatctgtccttgaa	174

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
PENT	70	intron5 - 6796	ggaggaagtcagcttcttac A/C gatgtggctcccagctttc	175
PENT	71	intron5 - 6636	ttttctctctacaccttttg T/C gttcagaggcagaggtgtgc	176
PENT	72	intron5 - 6448	gttggccagcgtctctgacag G/A accctcgggaccagctcctg	177
PENT	73	intron5 - 5218	ggagccctggtcgaagaagc C/G ttacgaccagcgcctggagg	178
PENT	74	intron5 - 4824	ggacagcccggggttgagc G/A gctgcatgaaggaggagg	179
PENT	75	intron5 - 4249	tcaccagagtgatttctcgc C/A ggcaggtgctgggttagcc	180
PENT	76	intron5 - 4230	gagcgagtgctgggttagc C/T cactggcggtgctccatgag	181
PENT	77	intron5 - 4182	ggaggttaaggggtggggg G/A cacttaggcagaggagctg	182
PENT	78	intron5 - 3369	ccaggtggggcgtgtgctt G/C tggcctggtgtgtggccag	183
PENT	79	intron5 - 2625	caggaagctgggcccctgaa C/T gagctgggcttttggccac	184
PENT	80	intron5 - 1200	attattgtgacatggggaag A/T gcacatttggctacacatgt	185
PENT	81	intron6 + 606	gcctggctagacgcccacca A/G tgacctgatgatggcagca	186
PENT	82	intron6 + 1229	tttggccaggaaaggggag G/A gcagccaggagcgtctggat	187
PENT	83	intron7 + 716	atggagatgtgctccccgg G/G ggttcagaggacctgcgtc	188
PENT	84	intron7 + 1537	ctctggggagacataaagc G/A cctccagaggacatcagcca	189
PENT	85	intron7 + 1718	gggcttcagggtgtctgagc T/C ccccgcatgtaggaccoca	190
PENT	86	intron7 + 2695	ggctttggggagccctggac C/T catlctagaaaacagcctt	191
PENT	87	intron8 + 140	ccagggctcccaggtcagag C/T ggccatggttagcttacaatg	192
PENT	88	3' flanking + 179	tacttagggaggtcaggg G/T tcacctggccatggccatgg	193
PENT	89	3' flanking + 394	gatgacactgctattctctaa A/G tgaatggccttggctgacc	194
GSTM3	1	5' flanking - 144	ccaacgcggcatttagtcgc G/T cctgcgcagccctgtgga	195
ALDH5	1	5' flanking - 2808	cdttgacgttaggactctc C/T ccacgtcccctaatccatc	196
ALDH5	2	5' flanking - 2575	gcagttcccgcgatagaga A/G ggtccggtccttcccgtgt	197
ALDH5	3	5' flanking - 2537	tgtggtgaactgtaaaaaa T/C tgcctgtattcaggaggata	198
ALDH5	4	5' flanking - 940	cttcaactaatctgggaaca C/T tacactctgtttaatttca	199
ALDH5	5	5' flanking - 785	tgggaagctgaagggag G/T ctgagacctgtgttgggg	200
ALDH5	6	exon1 + 183	ccgacggtcaaccctaccac T/C ggggaggtcattggcagct	201
ALDH5	7	exon1 + 257	cgtaagcagcccggtgaag C/T ctccgcctgggtcccat	202
ALDH5	8	exon1 + 320	gcggggccggctgctgaacc G/T cctggcagacctagtggagc	203
ALDH5	9	exon1 + 605	acttggcccgccactgcgcca C/T agccaacactgtgattatga	204
ALDH5	10	3' flanking + 1527	aaagtgcacactgaagacc G/A tagagaaaactctgtgttc	205
TGM1	1	Exon2 + 179	tgccgaatgcggcagatga C/T gactggggagcctgaaccctc	206
TGM1	2	Intron9 - 611	acttaccactctgtctctc C/T tgccaggccttctctgtca	207
TGM1	3	Intron9 - 272	ccgcacatctgtacctgcc G/G ccactcctccagcagagcagc	208
TGM1	4	Intron10 + 54	tcagtcattgggttctctggt C/T ccaacttcccgctgactga	209
TGM1	5	Intron10 - 51	aggaggccggagtcagacc A/G ccctcagaccctctggtcca	210
TGM1	6	Intron12 - 47	ggagtgccctgggggagcc T/G catgtagggaagcagccctc	211
TGM1	7	Intron13 + 72	ggataaggacatcagagtg G/A gcgctaagccagcagcaggc	212
TGM1	8	Intron14 + 1671	atctcttaccacaccccca C/G catggtggggaggttctcca	213
TGM1	9	Intron14 + 1691	ccatggtggggaggttctc G/A tcttaaggatccgcagagc	214
TGM1	10	Intron14 - 1634	tccttgcctcctctctcag G/A gagctcagaaacaccttcaa	215
TGM1	11	Intron14 - 1459	ggaaacccctcagaaaccag T/C tccaagccaatgctttgcc	216
TGM1	12	Intron14 - 801	cagaatacaaaagtgggat G/C gaggaagaggtcccgttag	217
TGM1	13	Exon15 + 233	ctcgaggtggagcttagccc T/C gtgccaggagcaatgggact	218
TGM1	14	Exon15 + 369	ggagtcagttcttacttgca C/A tgggggaacagatgctaata	219
GGT1	1	intron1 + 85	ttatccagtaaggtggctcc G/A tcacctcttttctggtggg	220
GGT1	2	exon3 + 68	gacggccaggtccggatggt G/T gtgggagctgctggggcac	221
NOO1	1	intron1 80	aggaggtttagggggttg C/A ctgaattttgttcttact	222
PIG3	1	5' flanking region -47	gggaaggaggaaggaaga G/A ggggaggtgtgttctgcta	223
PIG3	2	intron 2 243	taacacgggagcccgagag C/A agtccagcttcttagaatc	224
PIG3	3	3' flanking region 282	agcagggcccgccctgcc G/A ctactcactcggggccacc	225
NOO2	1	5' flanking region -434	ttctgttgcaccagggacc C/G tcattctgtaaccgggatac	226
NOO2	2	5' flanking region -406	gtaaccgggataccagccag A/G gatggggagcgggagcgca	227
NOO2	3	5' untranslated region -102	tcttgcggctcctactggg G/C gtgcgtggtcggaaggtga	228
NOO2	4	intron 1 1919	tcactcaaatagagctgagt T/C agtcactcagctcttgacc	229
NOO2	5	intron 1 2004	acaaactcacatgccacag C/G catatgatgtaaacatgtaa	230
NOO2	6	intron 1 3391	aaagcagagggctgtgacag C/T gccctgcacctaggttag	231
NOO2	7	intron 1 3456	caaaggcctcatctccaggg C/A ggccaactcttctgttttag	232
NOO2	8	intron 1 3595	actgccagcttttaggttca T/C tcttgaagtgtgtgtgtg	233
NOO2	9	intron 1 3596	ctgcccagcttttaggttcat T/C cttgtaagtgtgtgtgtg	234
NOO2	10	intron 1 3598	gccagcttttaggttcttc T/C tgtgaagtgtgtgtgttca	235
NOO2	11	intron 1 3651	ccctgcgctttgaaggagag A/G atgtgacctctccacattc	236
NOO2	12	intron 1 6036	tgggttgccggttcaactgat C/T cccagcctctctgctcagtc	237
NOO2	13	intron 2 14	atggcaggttaagtactact A/G ttgtggagtaagactttttt	238
NOO2	14	intron 2 192	gccacgtggaagtgtataaa C/T tatctggaattatctgtttt	239
NOO2	15	intron 2 635	caccctgttttagcactagc A/C ccatccctggcctctgccca	240
NOO2	16	intron 2 685	agtagcaccctcccccacc G/A gctgtgacaaaccaaagtgt	241
NOO2	17	exon 3 139	ctgatttgtatgcatgaac T/C ttgagccgagggccacagac	242
NOO2	18	intron 3 36	aatgctctattataaaac T/C atctttatgtttttactttt	243
NOO2	19	intron 3 728	aacgtgggcataaaaccacca T/C ctagtccaaaagcagagt	244
NOO2	20	intron 4 1577	tgccctctgcacaccccttcc C/T gacaccagcccttctttac	245
NOO2	21	intron 4 1832	tcggccggccacgtggagcc C/T gctttcctctgcacccac	246
NOO2	22	intron 4 2583	tgggttttagcagcagctct C/T gtccctcctcctgctgccca	247
NOO2	23	exon 5 330	ctgtactggttcagcgtgcc A/G gccatctgaagggtggat	248
NOO2	24	exon 5 405	atccagagattctacgattc C/T ggtttgctccaggtatgtgc	249
NOO2	25	intron 5 21	gtatgtgctcttgataaag A/T tcactatgtagtattggagg	250
NOO2	26	intron 5 253	atggcaacaaggaggtggg T/C caggtgtcaggtgacgggg	251
NOO2	27	intron 6 2435	cccccttaaatcattttaa T/C gaattgtatgtaacaggtgt	252
SULT1A1	1	5' flanking region -1597	gcagagtaaggagctcact C/G aagaagaggaaactgggggt	253
SULT1A1	2	5' flanking region -1491	gaggggtatattcatgaaga G/T tccaggaaaaggtaagatt	254
SULT1A1	3	5' flanking region -1376	cggtttcatatgttactgat C/T atacaatgagatcctaggtg	255
SULT1A1	4	5' flanking region -1375	ggtttcatatgttactgac A/G tacaatgagatcctaggtga	256
SULT1A1	5	5' flanking region -1370	catatgttactgatcataca A/G tgagatcctaggtgaacct	257
SULT1A1	6	exon 1B -65	aacctgcatcccccacaca G/A caccacaactcagccactgc	258
SULT1A1	7	intron 1B 442	ggccacccctgcttaggctt G/A tgcctttgtgagtcacag	259
SULT1A1	8	exon 1A -197	gctgggggtccagcaggaa A/G tggtagacaaaggcgctg	260
SULT1A1	9	exon 1A -159	ctggctggcaggagagcagc A/C caggaaaggtcctagagcttc	261

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
SULT1A1	10	exon 1A -95	gagaccttcacacacctga T/C atctgggcttggccgacga	262
SULT1A1	11	intron 1A 60	ctggttttcagccccagccc C/T gccactgactggctttgtga	263
SULT1A1	12	intron 1A 69	agccccagccccgccactga C/G tggctttgtgagtgccggca	264
SULT1A1	13	intron 1A 174	tgtgatgttggttaagggaaac G/A ggcctggctctggccctga	265
SULT1A1	14	intron 6 11	catgaaggaggtagaccac C/G tgtgaagcttccctccatgt	266
SULT1A1	15	intron 6 17	ggaggtgagaccacctgtga A/T gcttccctccatgtgacacc	267
SULT1A1	16	intron 6 35	gaagcttccctccatgtgac A/T cctggggccggcacctcac	268
SULT1A1	17	intron 6 71	ctcacaggggacccaccagg T/C caccagcccccctcccttgg	269
SULT1A1	18	intron 6 108	ttggcagccccacagcagg C/A ccgatttcccatcctgcct	270
SULT1A1	19	intron 6 111	gcagccccacagcaggccc G/A gattccccatcctgccttct	271
SULT1A1	20	intron 6 270	ctccctgccaaaggggtgac C/T acccaggggccacagctatgg	272
SULT1A1	21	intron 6 488	ttttacttttctgaatcag C/T aatccgagcctccactgagg	273
SULT1A1	22	intron 6 509	aatccgagcctccactgagg A/G gccctctgctctcagaacc	274
SULT1A1	23	exon 7 600	ccctctgctgctcagaacc C/G aaaaggagattcaaaagat	275
SULT1A1	24	exon 7 645	gagttttggggcactccct G/A ccagaggagaccgtggaact	276
SULT1A1	25	exon 8 902	gctgtgagggggcctctgg G/A gtcactgcagaggaggtgtg	277
SULT1A2	1	5' flanking region -547	tgcttcttcttggttctatg G/C atccatgctctgctccaccc	278
SULT1A2	2	5' flanking region -425	tgtgggttgcactggggcag G/A accctgtgcaccttcaagac	279
SULT1A2	3	5' flanking region -358	ctttccagggcctgcctatc C/T cagctttctcttcttgcct	280
SULT1A2	4	5' flanking region -355	tcacgggctgcctatccca G/T ctittctcttcttgcctggg	281
SULT1A2	5	5' untranslated region -28	actgcggggcagggggcac A/G aggcagggttcccaagagct	282
SULT1A2	6	intron 1A 85	ctgactggccttggtagtg G/A ggcaagtcaactcagcctccc	283
SULT1A2	7	exon 2 24	gagctgatccaggacatctc T/C cggccgccactggagtagct	284
SULT1A2	8	intron 2 34	gccaccacccctctccagg T/C ggcagtcgccaccttggcca	285
SULT1A2	9	intron 5 77	cagcaaccctgtgtcggcac T/C ccttgcccgcttctccagtg	286
SULT1A2	10	intron 6 684	actgggttccaggggtcga G/C gagctggctctatgggtttt	287
SULT1A2	11	3' untranslated region 895	gctctgagctgtgaggggg T/C tctggagtcactgcagagg	288
SULT1A2	12	3' flanking region 98	cctccccctccagctctcct A/T acttgcccttggggaggg	289
SULT1A2	13	3' flanking region 817	ccactgactggggccttgc A/C aggcgtccagggcctggcaaa	290
SULT1A2	14	3' flanking region 1006	ccttccccctggagggctgct T/C taccgcgtgtggggcgcat	291
SULT1A2	15	3' flanking region 1464	tcctgtagccaggcaagtt C/T ggtgaccagagagcagcccc	292
SULTX3	1	intron 1 332	cctgcttctccctttactcg G/T ctggctgtgtgacctggag	293
SULTX3	2	intron 1 1167	taggaatggctaagcgtatc G/A ttgcttctgtggccactca	294
SULTX3	3	intron 1 2872	cattctcactgatgcagag G/A aagcttctggcctggcgct	295
SULTX3	4	intron 1 6242	cacccttggcttttaccagc A/G tggaaacattttacctgaat	296
SULTX3	5	intron 1 6601	gcgtgggtctctgagggag C/T gagaggagagtgaggggccc	297
SULTX3	6	intron 1 6768	agcttgaatgagccagact C/T tctggggacctgttgacccc	298
SULTX3	7	intron 1 6905	agtaacttgttttatccctc C/T catcctcacaactttgccat	299
SULTX3	8	intron 1 7464	gccaggatcccttgagagac G/A acatgaacacagccaggagc	300
SULTX3	9	intron 1 7833	tgcttccggctgggcttggc G/A ggggcagctgtgtccaggc	301
SULTX3	10	intron 1 8189	caaacctggggcccttaattg C/T gcacacagagcctctcttc	302
SULTX3	11	intron 1 8316	ctctcacacaaggcgaggag C/T tcttcccttgaggcagagc	303
SULTX3	12	intron 1 8617	agacagaggctggggccaag C/T cagggttgcggagcttctct	304
SULTX3	13	intron 1 8631	gccaaagccaggttggccga G/T ctctctgactgttcaaggcc	305
SULTX3	14	intron 1 9493	ttttctcttagagcttccc G/A tctgtctctgtgtcagaggc	306
SULTX3	15	intron 1 10306	caggccggggagcctgaatg C/T gcagtcgtgaggggtggccag	307
SULTX3	16	intron 1 11987	tcataaataatgatatacag T/C acactttttggaaatttgag	308
SULTX3	17	intron 1 13085	ctctgtgcccggtgtgtgaga C/A aggcacatgccttagagctct	309
SULTX3	18	intron 1 13108	gccaatgccttagagctctgg G/A gaggttccacccacagaacagc	310
SULTX3	19	intron 2 700	gaaccactcggagtgcttcc C/T gtactgcgttccgagggccc	311
SULTX3	20	intron 2 818	agccatagtagcttagccag G/A atcagcgtggggagggagc	312
SULTX3	21	intron 2 1677	actccacttcccctgaaccc C/T accccttcttctctctctg	313
SULTX3	22	intron 4 4954	gcgtgcccgaagccggggagg C/T tgggatggctcaagacgtga	314
SULTX3	23	intron 5 3632	ccagctgactccacacacag C/T ggtcagagaacattgtcttt	315
SULTX3	24	intron 5 3662	acattgtcttttaaggtttc C/T gaagtgcctgaataaaagaaa	316
SULTX3	25	intron 6 1874	tctgatctcagagagctgac A/G atggaaagaattctaaacga	317
SULTX3	26	intron 6 2133	agaccgggtgcctgcagttta T/G cccacagctcagccctccct	318
SULTX3	27	intron 6 2524	ggaaaggccagggctgcctg T/C gatgccagagcagtgact	319
SULTX3	28	intron 6 2573	agatcatactcgtctctggg A/G tgtttattaaacacctgcca	320
SULTX3	29	3' flanking region 12	gttcccggttgcgtccag C/G gtttcgcttgggggtag	321
SULTX3	30	3' flanking region 445	tcacaaagcctgtcttccga T/G ttcctgtggagagagctcc	322
TPST1	1	5' flanking region -298	accgccaccatgccagct A/C attttttttgtattttttt	323
TPST1	2	intron 1 3520	agaaaaagcagattaatgtaa C/G agtgacgcttagacaacag	324
TPST1	3	intron 1 3610	ggcagaagagaaatatagca A/G ctattaaacacaataaatt	325
TPST1	4	intron 1 20828	tattgctgtccacctggtca A/G tgttctctgtgataagtc	326
TPST1	5	intron 1 -6761	aatacaatactattctgtga T/C aattctagaggccacagaga	327
TPST1	6	intron 1 -544	tagaacaagtgaatatattta C/T gttcttagtggtttatggtt	328
TPST1	7	intron 1 -526	tacgttcttagtggtttatg G/T ttggcagttttcccccaaca	329
TPST1	8	intron 1 -234	tcaagacatttaataatgca C/T atgttcaagtaaacctttt	330
TPST1	9	intron 1 -48	ttatagtggttttaagcatg A/G ttctaaaaaatttaataaa	331
TPST1	10	intron 2 -18944	aaaacattagaactgggaag G/A ttaaaaaatttttagtcttt	332
TPST1	11	intron 2 -18687	tatgtgcacccctaataacat A/G ttctcttaaaactagtacta	333
TPST1	12	intron 2 -18501	ttggaaggttaacttaatga A/G gtgcctgaaaaacagggata	334
TPST1	13	intron 2 -159	gaatggggtatttccctcagt C/G ctgccactggctgctcttg	335
TPST1	14	intron 2 -19	acctgttgcttaaacctcac G/A cctgctttgttttccaggt	336
TPST1	15	intron 3 158	tgtctgggggaagaagatag C/G gtctgggactgtttgatttt	337
TPST1	16	intron 3 3779	agcagggcacgtcacctccc C/T ggcacacccatgtgttcacc	338
TPST1	17	intron 4 292	ttgttattttcattatgaac C/T atgaatatttcagctgaaa	339
TPST1	18	3' untranslated region 1518	gttgctgtacatgttctaa T/G gttttgtagaacacgtgtgc	340
TPST1	19	3' flanking region 264	acgggtgcttggcctgcatta C/T caattttagtagaagtttct	341
TPST2	1	intron 2 578	tcacctatcatcctcactgc G/A aggatgccaggataacctccc	342
TPST2	2	intron 2 789	cttaagccatcgtgcaggtc A/G ttgctgttcttctgctcactt	343
TPST2	3	intron 3 2009	cccaggctggagtgtagtgg T/C gtgatctcgcctcactgcaa	344
TPST2	4	intron 3 2017	ggagtgtagtgtgtgatct C/T ggcactgcaacctccgcc	345
TPST2	5	intron 3 2035	ctcggtcactgcaacctccc G/A cctcccgggttcaagcagtt	346
TPST2	6	intron 4 104	aatgttcagctctcaattc C/T tggtaactgtgattgttct	347
TPST2	7	intron 4 379	taataaataaactattgtt C/T ccttcttctgtttataaggt	348



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
TPST2	8	intron 4 588	tactgcagcctgatacttct C/T ggcttaagccatcctctcac	349
TPST2	9	intron 4 626	caccocaggctcctcagtag C/T taggaactgcaggtgcacgcc	350
TPST2	10	intron 4 718	cccagggctggtotagaactc G/G tggccgttaaggagatgccct	351
TPST2	11	intron 4 873	gttgatggccttattttatc G/A ttccattacagcttctagt	352
TPST2	12	intron 4 949	caaatatttgaanaatggag C/G caggcctgggaagagcttt	353
TPST2	13	intron 4 1033	taagctcagcattttctgagc G/A tgcctgatttttaggaata	354
TPST2	14	intron 4 1051	gcgtgtcgtgatttttagaa A/G taaacagttatcgtattgaa	355
TPST2	15	intron 4 1356	gattcaacgtacataccagc C/T gacattgacaggtgaatggc	356
TPST2	16	intron 4 1707	gtotccttaaaaggtggctc G/T ctgcccctggcttgcocag	357
TPST2	17	intron 5 215	aagaccagcctgacacaaac G/A gtgaacccccctctctacta	358
TPST2	18	intron 5 341	tggaggcagaggttcagct G/A agctgagatcacgcctgttc	359
TPST2	19	intron 6 31	ggacttcactgggggttccc G/A ctgcttctgggtggcccccgg	360
TPST2	20	intron 6 273	gtttgtctgacactggggag A/G gggcagggaagcaccatag	361
TPST2	21	intron 6 693	aaagggttttttgaactt G/C gtaattcaagatttaagat	362
TPST2	22	intron 6 1635	tcttgggtacagagttggcc T/G tgaacaaacatgagctctt	363
TPST2	23	3' untranslated region 1147	cttccccattttcagatctc C/T gcaaatgacttcattgccaa	364
SULT1A3	1	exon 8 843	cgcttcagtcgggactatgc G/A gagaagatggcaggctgcag	365
CST	1	intron 1b 6302	agagctccccagagaggact A/G tgaagctcatgatgatga	366
CST	2	intron 2a 1004	gagtgcagccccatctcta C/T aaaaatttttttaaaaagta	367
CST	3	intron 2a 1395	atgcctaagtttacagtagc T/C aggcaggaaaggcacaacca	368
CST	4	intron 1d 473	ccagagcctgaggtttgtgc T/A gggcccccctccatggctgcc	369
CST	5	intron 2b 726	ctatctctccagtgctctc G/T gtccctgtctggaccctgct	370
CST	6	intron 2b 745	ctgtccctgtctggaccctg C/A tggggggccacagagcaggc	371
CST	7	exon 3 85	tcactagtcttctgctgct G/A tgcactcctatgcctggccc	372
CST	8	intron 3 308	tcgtctgaggtcagggagttc G/A agaccagcctggccaaatg	373
CST	9	intron 3 853	ttttgtctataaaatggca G/A ttctatgtggcccaagctga	374
CST	10	exon 4 198	gaggcagtgatccggggccaa C/T ggctcggcgggggagtgcca	375
SULT1C1	1	intron 3 2280	gcataatttttggtatttta G/T tacagtcagggttttaccat	376
SULT1C1	2	intron 3 3742	gcagatctcactttctggca G/A attccctgaatttgcctccc	377
SULT1C1	3	intron 3 4453	ttcatagggtctttccctca C/T ttgtttttgtaattttgtata	378
SULT1C1	4	intron 3 5234	gaaaagagactagaggcagg A/G gagctttgcagttcttctaa	379
SULT1C1	5	intron 3 6175	tgctggcaggaagggtgagg G/C agtctctcttctctgtcc	380
SULT1C1	6	intron 4 205	acatgaaggcaggatccaga T/C tgaatgtttggaggaaacta	381
SULT1C1	7	intron 4 408	ggctcacgcctgtaatccca G/C cactttggggagggccggcg	382
SULT1C1	8	intron 4 429	cactttggggagggccggcg G/C gtggatcacaaagtacaggag	383
SULT1C2	1	5' flanking region -110	tcctgttaactcacagagaa C/T ggaagggtctgaaacgggacc	384
SULT1C2	2	exon 1 15	acactaatggccttacacga G/C atggaggattttacatttga	385
SULT1C2	3	intron 1 297	gtagactttttattttatc A/C ttcccaatctaggcccttat	386
SULT1C2	4	intron 1 363	gagtgtgtgagctagaagg T/G gatcctgagctgatttggg	387
SULT1C2	5	intron 1 2300	gggctactatcagcagccac C/T acctcagggaaggatgacttc	388
SULT1C2	6	intron 2 455	aagacttggagcaaataga T/G aaaaaaaatcgtagaat	389
SULT1C2	7	intron 4 55	caaaatctccaaacacccta G/A aaggaaagaatcttttctt	390
SULT1C2	8	intron 4 111	ctgcctctttaaagggaaca T/C tctcacttctcttcaggaa	391
SULT1C2	9	intron 5 1657	ctttgtgttactttgttt T/C acttggtaaaaaagttgt	392
SULT1C2	10	intron 5 2082	tctgctcctagagatggagg C/A gtcccacagccacagtgatg	393
SULT1C2	11	intron 6 933	agctactgaactctctccac A/G taactgtatttcagggcgag	394
ST1B2	1	intron 1 80	acttgtccataaaatcatta C/T catttcaataaagttaata	395
ST1B2	2	intron 2 -352	aacattttaaatagtcatta T/C agcaatgcacaggtataata	396
ST1B2	3	intron 2 -85	attacataatgctcaaaaat G/A tcttgaanaactggttggca	397
ST1B2	4	intron 4 460	tacttgacattaaaaata T/C ctgatttttatatatccata	398
ST1B2	5	intron 4 470	ttaaaaaatatctgatgttt A/G tatatccataaatagctaat	399
ST1B2	6	intron 4 518	tttaagattgtctctcatatt G/C ttacttctttgtttactaa	400
ST1B2	7	intron 4 616	aatgtttatgaaatagact T/C ttatctgtttttagtggcct	401
ST1B2	8	intron 5 58	ctgcatcatgctgtaaaagg G/A ttgatatttgccttccaact	402
ST1B2	9	exon 6 612	taatagaatccaaaggagga A/C atcaagaagatcattagatt	403
ST1B2	10	intron 6 582	aatacattacttccatttaa G/A tagtctgtttattgtggcct	404
ST1B2	11	intron 6 3130	agatgtaaaaaattattcca A/T ttttaaaagcctgaaaaatt	405
ST1B2	12	3' untranslated region 907	tttaagtgcttaaatcaca C/A atctgaagaataagagatt	406
ST1B2	13	3' flanking region 50	tcagatcccagttttgttc T/G ttgattctgagtttccaat	407
ST1B2	14	3' flanking region 328	tttgaccagggacactgtgt T/G ccaactgtctgtaccaggtt	408
ST1B2	15	3' flanking region 446	gtagtctcagatttttggaaat C/A tttttctatatacatccta	409
CHST2	1	5' flanking region -260	agccggcagctccgcccggc G/A gtgatccggggccgctccc	410
CHST2	2	5' flanking region -56	ggcctggggaccagccggc C/T gccgcctcggagtcgggc	411
CHST2	3	3' flanking region 218	aggagtgaacacatctttg T/A attctaaggcagaaccaa	412
CHST2	4	3' flanking region 383	gcagagaccaatgttttgg T/C ctgaggctggttcagaaaaa	413
CHST2	5	3' flanking region 952	tactgaacattctgcagaa T/C gttatactatgagaagaat	414
SULT2A1	1	intron 2 478	ggacttgggtctgtacacac C/T tctgttactgtgtgtaaat	415
SULT2A1	2	intron 3 382	caaaacccctcttaattatt G/A ttctatctgtctcagaact	416
SULT2A1	3	intron 3 409	tctgtctcagaactgattgc A/G tgactctaggatcgctatat	417
SULT2A1	4	intron 5 249	agctggaattacaggcaca C/T gccaccacaccagctaatt	418
SULT2A1	5	intron 5 395	aggcatgagccacggcgccc G/A gcaatttatcagctttaat	419
SULT2A1	6	3' flanking region 33	ttcctgtttaaagttaacca G/C ggttggcaggcagcgggtgt	420
SULT2A1	7	3' flanking region 46	gttaccagggttggccagc G/A cgggtgttcattgctgtaat	421
SULT2A1	8	3' flanking region 199	ttagccaggcagcttggctc A/G tgtctgtaatccagcactt	422
SULT2B1	1	intron 2 4162	ttctccctctctcaccat C/T cgcacacaggtgatctacat	423
SULT2B1	2	intron 3 879	ggggcctcagcagctgtggg G/A ctggactgtgggggtttgtg	424
SULT2B1	3	intron 4 3882	ttcacgctccttctgtggc C/T gaggctcctcctcgtga	425
SULT2B1	4	intron 5 1780	cctgcagaaggggtccctt C/T catgtccaagcagtaattggc	426
SULT2B1	5	intron 5 1814	taatggctgcagcatggagc G/A ttgtggggcattgagacg	427
SULT2B1	6	exon 6 789	ccctcttctcagggtctg C/T ggcgactggaagaaccactt	428
CHST4	1	5' flanking region -1092	atgaagccttggccatctc G/A ctgtgtctgtccagcactg	429
CHST4	2	5' flanking region -941	ctgcagagagagaacaggaa G/A ggaggaaagccacacaa	430
CHST4	3	intron 1 -150	caggaaatgatttggagaa G/T actggtgccattgttggcac	431
CHST5	1	intron 1 -144	ggcctcttaggtttcagcca A/C gacaggtgactcttagcacc	432
CHST5	2	intron 2 17	caacgttaagagcgttctca T/A tgcacgctccttgtttct	433
CHST5	3	intron 2 139	aatccagcactttgggagg C/A ggagatgtcgagtgatca	434
CHST5	4	intron 3 1829	gactgtatgtctgatttca T/C ataggaaacataattcatg	435



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
CHST5	5	intron 3 2037	aaatgaaccaacaccca C/G tgcagagaagcaacaaaaag	436
CHST5	6	intron 3 2134	aagcagctaaattgtgttc G/A tacagggtcaattaggcagg	437
CHST5	7	intron 3 2528	atggtaaaatttcgcctgggt G/A cagtatgtcagcactcctgt	438
CHST5	8	intron 3 2674	gcacttatcttagaagaagcc A/G ttctgaagactcagcagga	439
CHST5	9	intron 3 7039	ctgctcccgccggccaccc T/C gggaccgcagccagctctga	440
CHST5	10	intron 3 7211	gtagcccccagacaccccca T/G cctcaacatcccaattctggg	441
CHST5	11	intron 3 7294	ggagcttccagtggcttgggt T/C acccccgactcttctgctcat	442
CHST5	12	intron 4 108	gcagggtctctgactctgca G/A ggggcaatcacaggtggag	443
CHST5	13	intron 4 402	agcaactggaaaaagtacagt T/C gcacttgtatcgagggtggg	444
CHST5	14	intron 4 547	ctcctgtccccgcattgagg C/G gaaggagcagaggtggagtc	445
CHST5	15	intron 4 1142	gccccaggtctctatagctcc C/G cattggcagtgctgggattt	446
CHST5	16	intron 5 1187	cactgggcagtaattggggc A/G tgggatgggcatgaggccc	447
HNK-1st	1	intron 1 139	gtgttttggcagcttaaga C/T ctccctagtctcggggagta	448
HNK-1st	2	intron 1 1020	acctgagcagaaaaattctct T/C ctctgctgaatgaaaattg	449
HNK-1st	3	intron 1 1091	aagaatttgaacatcacca G/A gcaacttgcagttatattcg	450
HNK-1st	4	intron 1 1971	ctataactatttcaaacata C/T gaaacaggcataattggatt	451
HNK-1st	5	intron 1 2096	atttagaatatttcattacc A/C agaaatccaataataacctg	452
HNK-1st	6	5' untranslated region -91	ctatccagtgcacagagaaa C/A caagaacctcagttcagggg	453
HNK-1st	7	intron 2 -530	agtggcggaggcagagaagc G/A tcagttgttcttcttctgt	454
HNK-1st	8	intron 2 -466	gctacatctgttcagccagt C/T agaattttaaacacagccag	455
HNK-1st	9	intron 2 -92	acggaaatatttctgctgac A/T ctctactgactgaatcacct	456
HNK-1st	10	intron 3 152	catggcctccgttccctcat G/A ttacagaggtgtgaggggag	457
HNK-1st	11	intron 3 312	cacagtgcccttatgctgt C/T agcaggggcctctcaggtct	458
HNK-1st	12	intron 3 1948	tcctttgatgtatcaagttt T/C gtgctgaatttttcaggt	459
HNK-1st	13	intron 3 2140	ttacacctggagggagccac C/T gcagcgctccttaatactgc	460
HNK-1st	14	exon 4 187	agaagcacattcctgagaaa C/T tgaagggtgggcacagccagg	461
HNK-1st	15	intron 4 581	cctgatcattccctagctgg G/A atgaggggtgcaactctggaa	462
HNK-1st	16	intron 4 615	tctgggaagcctctcacttc G/C taacccccattcttgatcta	463
HNK-1st	17	intron 5 7	gattgttctaattgtgtgt G/A tgggtctactgaatgtccac	464
HNK-1st	18	intron 5 123	acctgaaggagctgtgtggc G/T tccagacaggcctgtttttg	465
HNK-1st	19	intron 5 721	ataattatgggtctgcttta T/C gaaatttagcttcagacagg	466
HNK-1st	20	intron 5 867	tgctgccacagagtcgggt G/A tcaactcctggccactgtttg	467
HNK-1st	21	exon 6 444	ccaggagcattttctccat T/C gaggagatccccgaaacgt	468
HNK-1st	22	intron 6 94	ctgagttctgtacttggcag A/G ttgatcggaggaccacagag	469
HNK-1st	23	intron 6 247	catgaagggtgacatcatttt G/A ttaatagaatttagcaggca	470
HNK-1st	24	exon 7 696	aggaggaacccgagcagagc C/G cgggggatccagtttgaaga	471
HNK-1st	25	exon 7 870	gagaccctggaggacgatgc C/T ccatacatcttaaaagaggc	472
HNK-1st	26	3' untranslated region 1110	tcaaatcttttattagacc T/C ggggctaaccaggtgaagat	473
HNK-1st	27	3' untranslated region 1178	ccacaccctctctttgagga C/T gcccggtgtctccacaggc	474
HNK-1st	28	3' untranslated region 1393	ggaagcatcacacagcgtta G/A gagccgtttcttcagggtg	475
HNK-1st	29	3' untranslated region 1452	tgaggtttctcgtgctagtc A/G ggggtgcttcacccatcact	476
HNK-1st	30	3' untranslated region 1540	gcaagggggctgctgaatc G/C cagagacttttgcagcatca	477
HNK-1st	31	3' untranslated region 1696	gggtgtgtgtgttccaggg G/A tccatttttcagaatccat	478
HNK-1st	32	3' untranslated region 1829	agggagggtttttctacct G/A agaaggggagtgcttttgag	479
HNK-1st	33	3' untranslated region 2211	tccagcagtgccgcttccgt G/T caacaaggtaggcctgggtg	480
HNK-1st	34	3' untranslated region 2212	ccagcagtgccgcttccgt C/T aacaaggtaggcctgggtg	481
HNK-1st	35	3' flanking region 1016	cacacgaagggtgtgactca C/T ggctgcaggggacccaggt	482
HNK-1st	36	3' flanking region 1152	gcattgcttctatctgga A/C tctccagaagcagggaacag	483
HNK-1st	37	3' flanking region 1291	gcccagaccctcagcagagt A/G gtgcagttacagggtgagc	484
STE	1	5' flanking region -605	caggtttctaaaaataaat C/T gaaaggtagtgatgtttac	485
STE	2	5' flanking region -536	taaaattttcaggtctgctt A/G agagttaaaggcaagaggtt	486
STE	3	5' flanking region -231	ccttcttcccaaccctga C/T ggcagacttgggaatttgaa	487
STE	4	5' untranslated region -64	tcagcgttaagatctgctt G/A gtattttgaagagataaaac	488
STE	5	intron 1 69	aaatagaaatgaaaattat G/A tattacaagctcttaaaaa	489
STE	6	intron 1 311	caatgagaaaataaagcaag C/G agggtagaaggaggtagaat	490
STE	7	intron 1 655	tctaagaagtagggactat G/A agaaccctctatgtatctata	491
STE	8	intron 1 671	ctatgagaaccctatgtat C/T tatatccaccatagatttct	492
STE	9	intron 1 772	aaaaggcaggttgggaagtg C/A agggagggtatgcagaaa	493
STE	10	intron 1 1715	taaccattctgtttaacct A/G tcatttttagccaagtcaat	494
STE	11	intron 1 1928	aaatgatacatattcaggaa A/G tcaaaaatctctgacttaga	495
STE	12	intron 1 1953	aaatctctgacttagatacc C/T ggcaataataatcaaatga	496
STE	13	intron 1 2087	aaatttgaagaatttgaag T/G tctgtgtttttatttatca	497
STE	14	intron 1 2323	taggtatgtaggagggtccc G/C ttatatacatagtgttaat	498
STE	15	intron 2 165	tctattccatgaccacaatt T/G ttacctgttaactgaatagt	499
STE	16	intron 2 1707	cctaggaccacaatgagac A/G taatataaccatcagtaaaat	500
STE	17	intron 3 850	gggtgtccattccctcaagaa T/G ttatactttgtttacacac	501
STE	18	intron 4 1653	agtaacaggctagtagataa T/C ataaataactgaggccaacg	502
STE	19	intron 4 1899	tacatgaacttagagaatca A/G gtatgacacacacccaaca	503
STE	20	intron 4 1930	cacaccaacaataaaattac A/G cagaatgataaagaatttg	504
STE	21	intron 5 666	ttctgatcatgtagtataca T/C tataaagaaaataataatgt	505
STE	22	intron 5 982	aggcaagcagaaccttttg A/C ctacacacacatttatattt	506
STE	23	intron 7 369	agattttattctctctctt T/C ttgagttgaagaataagtt	507
STE	24	intron 7 447	cacctttcaagggttaagtg C/A aaaaaatagaatttcaaat	508
STE	25	intron 7 672	aatcttgcctttgaacct A/T ctgtcagtgagagtcaggga	509
STE	26	intron 7 856	tgttacagaggacttaaaac A/G gttgtcttgcgttgcacagg	510
STE	27	3' flanking region 218	cagcctcccaagtagctagg A/G ctacagacatgtgaacct	511
ADH1	1	5' flanking region -55	atcatgtgtggaactggat C/T ggggttattcaagcaaaaa	512
ADH1	2	intron 1 268	acatttgcggtaaagcgata A/G ttatttccaagctaatcatg	513
ADH1	3	intron 3 442	aaatggaggctacatggcta C/A ggcgtgaatgagcatgacct	514
ADH1	4	intron 6 56	tacaacttggaggatgcatt T/G aggcgtcagaatatatgttt	515
ADH1	5	intron 8 74	gtctagcagaataatgaaa G/A tgggaaggtagaaaaatta	516
ADH2	1	intron 2 340	ctattttttaaagcgtgcatt T/C ctacataagacttaaat	517
ADH2	2	intron 3 91	aaggcaatgagagacgaaag T/G gcttgacaaaggtaccggc	518
ADH2	3	intron 3 205	atgtattgtacccttcaacc A/G ttatgtaccgagttatctact	519
ADH2	4	intron 7 108	acaattgacaaggcaagatt T/C tgaaaaacaaatcaaaaataa	520
ADH3	1	5' flanking region -254	tgagagaagagaagcaggaa C/G ttgagagaggagagagag	521
ADH3	2	intron 2 355	tatgcattctcttatatt A/G caagacaaaaattttaggat	522

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ADH3	3	intron 3 32	acactcaggaacatgcctt G/A gttcacatcacaaagattag	523
ADH3	4	intron 4 6	ctgcttgaataatgagtaag C/T ttctgatgctttctttgcac	524
ADH3	5	exon 5 453	agcaccttctccaggtacac A/G gttgttgatgagaatgcagt	525
ADH3	6	exon 6 815	ttcgtttgaagtcacgtgc C/A gcttgacacacatggtatgat	526
ADH6	1	intron 3 249	tgaacctggacttgaagta C/A aaatgagacaaaaattatg	527
ADH6	2	intron 6 1072	taacccctatactgtattgc A/G tcaactttctaacaggcagct	528
ADH6	3	exon 7 885	gtctgtgtgtgtgtgtgtgt G/A ttgcctgccagtgctcaact	529
ADH6	4	intron 7 1292	gttgagaacactgcctagt C/A ccgtctgtgtgtcctagaatt	530
ADH6	5	intron 7 1616	ctatcacagaataatccgca T/C agaacactaagcagattacg	531
ADH7	1	5' flanking region -528	tgtgcagacacagaagttt T/C acttaactttctacacctaa	532
ADH7	2	intron 1 361	tcagtagcatgtgctgcaact C/T gctgcagtagttcaatggga	533
ADH7	3	intron 3 183	aaacctcaacctttagaaggc A/G aaaccttacggtgtttataaa	534
ADH7	4	intron 4 76	tgaattgaattaataatc G/A tttattttagttatcaaaaa	535
ADH7	5	intron 6 615	tggcatagcgtaaagagact T/A ggaataatggaataaagcca	536
ADH7	6	intron 8 532	aagtctaacatatacccaa T/C ttgatgtgccattgtactat	537
ADH7	7	intron 8 651	gctgctattttttcaagta G/A gccacaaaatttcottatatt	538
ADH7	8	intron 8 760	catitttttagatgaagaccaa T/G ttgttgaagcaataaata	539
ADH7	9	intron 8 1207	ttccacattttgtctagcc T/C acaggatcatcatattatga	540
ADH7	10	intron 8 1691	tcctcatctcattgcccac G/A ctcaattgcttttaattcagtc	541
ADH7	11	3' untranslated region 1364	attacatttttgaaggcta T/C aattgtatcttttaagaaaa	542
ADH7	12	3' untranslated region 1498	gatattagtaaatgcattccc T/C agagttaatttcaacttaaca	543
ADH7	13	3' untranslated region 1584	aaacactgtttatgagttaa C/G ttggtatcatattttgaatc	544
ADH7	14	3' untranslated region 1818	aatataaacatagagctaga A/G tcatattatcatacttatca	545
ADH7	15	3' flanking region 865	tacatcaaaagaataaatc C/T aagaaggaataaacacattt	546
HEP27	1	5' flanking region -191	tcagcactctgtgtctagct A/T aaggtttgtaaatgcaccaa	547
HEP27	2	5' untranslated region -163	gaacccatcaattccgtaca C/A attttgtgtgactttgaagag	548
HEP27	3	intron 1 1941	aaattttacccataccagcct G/C actctctgccactttctgtt	549
HEP27	4	exon 3 289	ttgtgtgccacgtggggaag G/A ctgaggaccggagcagctg	550
HEP27	5	intron 4 1070	ttgtcagttcacagagta C/T gactctttttctcgaactg	551
HEP27	6	3' flanking region 362	ggctttgtgtgtgtgtgtgt A/G tctgaactgggctgctgtgg	552
LICAM	1	intron 1 + 767	tttgacttcttcaatgggt G/A actgtgtgagtcactctgtt	553
LICAM	2	intron 1 + 862	gcattgggtcatgtgtatgt G/C tgagtgggctgaatgtaag	554
LICAM	3	intron 1 + 1332	cagggatgaaggagcagagc C/T gctgagaggccacacagtg	555
LICAM	4	intron 4 + 502	tttccctgggttttccctt T/C gcattccatctccctgagc	556
LICAM	5	intron 18 + 147	agcgagttatgaattccc C/A acaattcacattttctataat	557
LICAM	6	intron 24 + 221	ctccttagccccagagggg C/T cccaactttaagagcatact	558
AANAT	1	5' flanking-542	aggggtcaggatgggtgtgt G/T agctggggggcagggggtag	559
AANAT	2	5' flanking-263	ccccccacataagaggtggg C/G ttgtccaaagactccgagggg	560
AANAT	3	intron3 39	cgccacagctccagggagggc T/A ctgaagacagaggtcagcca	561
AANAT	4	exon4 150	cagccggccgtgcgcggggc C/T gcgctcatgtgcgagggcgc	562
ARD1	1	intron1 + 317	ccgtcgtgtctgtcggcccc C/G ctccctcggggctggggcagg	563
ARD1	2	intron6 + 322	gtcctcagcatctgctcac G/A ccaggggccacacactctct	564
ARD1	3	intron6 + 1095	aaggctccatctctgagacaa A/C aagtcacgtgtgacctgcc	565
ARD1	4	intron6 + 1179	aggagggaagacctgtatcc A/G gggacacccctccactcc	566
ARD1	5	intron7 + 159	ctccagggtctgtaggcaga C/T ggctctctctaaagcccagc	567
ARD1	6	intron7 + 295	tgaccagccctgccaccca G/T gagccttgggcagaaacctg	568
ARD1	7	intron7 + 416	actaccatggaggcccccac G/A acagagcgtctccccttgac	569
NAT1	1	3' UTR 215	aataataataataataaa A/T aaatgtatttttaaatggc	570
NAT2	1	exon2 867	cggtcccaaacctggtgat G/A atcccttactatttagaata	571
NAT2	2	3' flank 521	ccatccatactttgccacaa G/A agaaggaacatgagctttat	572
NAT2	3	3' flank 573	gatttgaatccctgtggaca C/T ggggtgaattacttttaaaa	573
NAT2	4	3' flank 918	attttctgtttgtaattcc A/G gtatcagggtctatagttaa	574
NAT2	5	3' flank 979	actattctccctctctgact C/T gtgatgactataataatctt	575
NAT2	6	3' flank 1958	tacattattgaagtaagccta C/T gtcatatccacctattttgt	576
NAT2	7	3' flank 2034	ccactgattcccagagctag T/G tcaataagaagacagtgct	577
NAT2	8	3' flank 2201	cagattactggagggtact G/A ttgtctaccaaatgcaaatg	578
NAT2	9	3' flank 2818	gggatattttgtctctttct C/G cccagtgcatgtttgaaacc	579
NAT2	10	3' flank 3237	atatataattccaattaaaa A/Δ caaaataaatttccgaaact	580
NAT2	11	3' flank 3386	caacaagagatttttttaa G/A ctttttaaaacaccagacag	581
NAT2	12	3' flank 3660	cagcactattcgcaatagca A/G agatgtggaatcaatctaaa	582
NAT2	13	3' flank 3973	agcagaaaaataaataatg C/T gtactagcgttactacctgc	583
NAT2	14	3' flank 4029	caaaacaaaccccatgaca T/C gattttatctatataacaaa	584
NAT2	15	3' flank 4118	ataagattaataatctgcata C/A aaatctttgtttacagcttg	585
NAT2	16	3' flank 4146	tgtttacagcttattatata C/T tgaattatgtctgctcccc	586
NAT2	17	3' flank 4279	ttaatctgataggattgtg G/C ctttataagaaaaagaaaag	587
NAT2	18	3' flank 4323	ttgtctctccccagtcag T/G taccaggaagagccatgtg	588
NAT2	19	3' flank 4446	tcaattggctttatctgcga T/C tctggaatcaggcaatactc	589
NAT2	20	3' flank 4462	gcgattctggaatcaggcaa T/C actccatttcataaaacaga	590
GZMA	1	5' -flanking -462	cctcagcttgcaattggcct A/G ctaattcttatataaatccaa	591
GZMA	2	5' -flanking -172	agcctgcctgctggcagtg G/C ccatcatccaccattctcac	592
GZMA	3	intron1 1949	gacataaggttctctctatc A/T gcattgtatggtttgcctgt	593
GZMA	4	intron2 + 683	gactcgtgaccaggttgaa C/T tagcctcagcatggaagggt	594
GZMA	5	intron2 + 1250	gttggtgtatttatactag G/A ttatgaatgatagccttaat	595
GZMA	6	exon4 + 105	tgcaaatgttcagggtgggg C/G aggaactcacaatagtcac	596
GZMA	7	intron4 + 696	atagagccttacctgaagaa A/G ggtgtgcagtatgcattgtt	597
GZMA	8	intron4 + 1141	ctgttcaggaggatccccg G/A ttccaacatggtttcttatt	598
GZMB	1	5' flanking + 529	gcctccgtctcacaccaaca A/G gcagatttccccaccagggc	599
GZMB	2	intron3 + 141	gaggggaagattgtgcagccc C/T atcactgtgtcggggcccag	600
GZMB	3	3' flanking + 448	ttttcaggcccttccctcc G/A atgggggcaggcttctccca	601
ESD	1	5' -flanking -333	gtcttgggacagagggttg G/A gggagttgaattaggccct	602
ESD	2	intron 1 603	gtcattttctgattgggtcat C/T agggaaatgggattgagccg	603
ESD	3	intron 1 717	tgttggtagaagcagcatt C/T taagcactcagtgaaattaac	604
ESD	4	intron 1 1864	gctttcatgcaggattgac G/C tagtgggtgtattaggaag	605
ESD	5	intron 1 2389	ttttgggaacacctgtctag G/A ttttaagagccagtggaata	606
ESD	6	intron 2 21	taaacctgtttttattgttta T/C atgttactctgaacattgaa	607
ESD	7	intron 2 588	taaaattagttatctctct G/A taagttcattatttaagata	608
ESD	8	intron 2 1498	tagaaaaatgttatcacac C/T gtaagtgttcagtattgta	609

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ESD	9	intron 3 92	ctttatctagatattatagt C/A cctcattttacttttaaaact	610
ESD	10	intron 3 422	gtaagagattaaacacaca C/T gcacacatacatatccctat	611
ESD	11	intron 3 581	agaaaacctgagaaatgaca C/T aatttttttaaaagccatagt	612
ESD	12	intron 3 2270	gccagtaattacatgttagcc G/A ttacatcaaatgtagtaat	613
ESD	13	intron 3 2951	taatgaagtaaatgtttca A/G cticcctaacaaaagttgaa	614
ESD	14	intron 3 3001	aaatgcagaaatTTTTGT G/A cctcagtcacatcaacaaaga	615
ESD	15	intron 3 3096	aaggagcatacagaaaactt G/C ccatgatggggcctttgtgg	616
ESD	16	intron 4 2611	tctaatagtccccagtatta A/G tgggtgcacatcttcatgtcc	617
ESD	17	intron 5 390	tottttttcatctctgttaa C/T atcaaccatacagttaaaca	618
ESD	18	intron 7 107	ttagtattggaactaaactt T/C tctagtgttgagaactttgg	619
ESD	19	intron 8 1090	aaattctaactaattaaagg G/T ttcatccttttagtaactaga	620
ESD	20	intron 8 1651	tataaagtgtgtgtaata G/A tatatatgaataagaatatt	621
ESD	21	intron 8 2047	agaaggaanaagccatttt G/C ttaagaatccctgagatag	622
ESD	22	intron 9 -3490	atagaaggagaggctatact A/G cctccttaagtctcaggacc	623
ESD	23	intron 9 -2596	actaaggataaaaatagtcg C/A tctcagtcacattggaact	624
ESD	24	intron 9 -666	aggccttaagacataatttc T/C cctcacataaagatacaaca	625
ESD	25	intron 9 -660	taatgacataatttccctca A/G ataaagatacaacatgtctt	626
ESD	26	intron 10 799	tatgttaactgaagaaatg A/G cattaagtcttaaatgttat	627
DDOST	1	intron2 629	attctgttaagaagtcttta T/C attaagaaatattgtctcct	628
DDOST	2	intron2 3125	gagaatattaggagcttctgc G/A tatgcctgaagtcagtcag	629
DDOST	3	intron2 3920	attactcatttaagtaata A/G tggattactgagcactgtct	630
DDOST	4	intron3 189	actgctgtccaggggtccat C/T tggggctgagccagctgga	631
DDOST	5	intron6 185	ctgtcctcttgttcggagg C/T gtggcagcttttcccttact	632
DDOST	6	exon8 37	aactatgaactagctgtggc C/T ctctcccgctgggtgtcaa	633
DDOST	7	intron9 37	tctgccccagaatgtctgcc A/A aaaaacggccccaggcctca	634
MGST1	1	5' flanking - 5	ctggagccctgaacaggagg G/C gacatcgtgacaagaacaa	635
MGST1	2	intron1A+330	atcagcagcgatgtgttact C/G tggcggtgaatcagggtga	636
MGST1	3	intron1C+1428	gtaaaaggaagggccttcc T/A caactgagaagtgaagattc	637
MGST1	4	repeat	attatttgcctacccagg G/A tttttcgggtcaagcagat	638
MGST1	5	intron1C+2914	ctcatcaggtgtgtgtcaga G/T ggcttggctgctggccagtct	639
MGST1	6	intron1C + 4274	attgtaagatttaacaag G/T tgatgaagtagtgatcata	640
MGST1	7	intron1C+4276	tgtaatagattaaacaagtt T/G atgaagtagtgatcataat	641
MGST1	8	intron1C+4306	gtgtacataatgtacatagt A/G tagttgaacacatagcaagc	642
MGST1	9	intron1C+4406	gatggctatgatgaccaata T/A gatacataaaatgtataga	643
MGST1	10	intron1C+4464	agaaagattgcagctgatag A/G tgcaggctaataaggacac	644
MGST1	11	intron1C+4683	aatggcagaggactggaaat G/T tacattttaagctttaccct	645
MGST1	12	intron1C+4767	gccttctcttcagcacatt C/T ccaattatacttccaattcc	646
MGST1	13	repeat	atttcaatttttttttttgg G/A gggggagacagagtctcact	647
MGST1	14	repeat	aattacctcccaaggcctc A/T tatccagatactatcacat	648
MGST1	15	intron2+2379	ttctcaaatctcattatata C/G tatttctcaaccacaaagttt	649
MGST1	16	intron2+2767	tttaactatagatgccttct T/G ctctcttctgttttgattta	650
MGST1	17	repeat	tcaactgcagcctcaacctct C/T gggctcaggtgatctccaa	651
MGST1	18	repeat	aaaaaaattttagatattgg T/G tactcctcatgttgccagg	652
MGST1	19	repeat	ctccctatgttgccaggct A/G atcttgaattcttgggtca	653
MGST1	20	intron3+1495	gtcagacaatggccttcagc G/A tctctcttctgcagaatag	654
MGST1	21	intron3+2528	ttttggagacattttcaga G/C agagcgttttcagcatcttc	655
MGST1	22	intron3+2567	tccctttccatttttaagt A/Δ gacttttttttttccactct	656
MGST1	23	intron3+2731	atacacatatggaacaatta A/C ctaaaaacttaagtaatat	657
MGST1	24	intron3+3288	gggtttatagttgtccccc C/Δ tccccgccccaaaagacc	658
MGST1	25	intron3+4288	ccattctatttgcactgc G/A taacacaggcgtagaagtg	659
MGST1	26	intron3+4378	aaatgtctgtccttttgca C/T gttgtgaaggagaaactaa	660
MGST1	27	intron3+4429	attggagggtgacgatctc T/C gtgatgctggggagaaatc	661
MGST1	28	intron3+4817	attgctatagaagagagtaa C/T gtaagcagaaatagttttc	662
MGST1	29	intron3+6077	tttgaattagtgtctttta T/C agttatctttttccacagag	663
MGST1	30	exon4+304 (3' UTR)	agaaattctgtacttccaat T/G tataatgaatactttcttag	664
MGST1	31	3' flanking+1581	tctgtgtcatgaacatgca C/T gcgtgcacgcgcacacac	665
MGST1	32	3' flanking+1729	tatgtggagcaatttgaaaa A/T agtatattctaaagccattaa	666
MGST1	33	3' flanking+3407	ggatcactgctaaagatccc G/A gagtcaactcatgtccagt	667
MGST1	34	intron1B+36	ggagaaagggaccgcatgca G/A aggggtgacaggcggagg	668
MGST1	35	3' flanking+25	gggtaaaccattttgaata T/C tagcattgccaatatcctgt	669
MGST1	36	exon4+266 (3' UTR)	aaagaaaatcatacaactca G/A catccagttggctttttaag	670
SULT1A2	1	intron 4 1728	tcagcttctccttttgccaa A/Δ ccaagagatgagctggcctg	671
SULTX3	1	intron 1 6415	tgacctctcctgttagtgt G/Δ gggggcagcttttccaggtc	672
SULTX3	2	intron 5 2457	gcccttaaaaggaagtctat C/Δ ctctctgccttccaggctc	673
PIG3	1	5' untranslated region-93	tccgcgaggatagacggccc (CCTGY)n cagacaatatgttagccgtg	674
ADH2	4	intron 7 + 108	acaattgacaaggcaagatt T/C tgaaaaacaaatcaaaaataa	675
ADH2	5	intron 3 + (1721-1723)	actgcatagaatttaagaa GAA/ Δ ctgtttttattcctctccag	676
ADH2	6	3' untranslated + (2305-2306)	gttaagtctttccactctc AG/Δ ggaagagattgtcattttga	677
ADH5	1	5' flanking - 115	taactgctgtaaaagtacac G/A ggaagcccttttccgacaa	678
ADH5	2	5' flanking - 114	aactgctgtaaaagtacac G/A ggaagcccttttccgacaaa	679
ADH7	16	intron 8 + 727	ttcagatccctgtaagccag G/A tattatttttaccattttta	680
GSTM1	1	5' flanking - 694	tacgaagtggcttaatttaca C/T agtacttagccagatgaccg	681
GSTM1	2	5' flanking - 661	gatgaccgaaggactcagta C/T ccgagggcccttaacagaaa	682
GSTM1	3	5' flanking - 658	gaccgaaggactcagttacc G/A agggcccttaacagaaaaa	683
GSTM1	4	5' flanking - 656	ccgaaggactcagttaccga G/A gggcccttaacagaaaaaca	684
GSTM1	5	5' flanking - 537	tagaggggactaagccct G/C ggagtgtctttcggatcaga	685
GSTM1	6	5' flanking - 525	taagccctgggagtgtctt C/G ggaatcagaggaagtcctgt	686
GSTM1	7	5' flanking - 465	aattaaattccaggttggg G/A ccaccactttttagtctgac	687
GSTM1	8	5' flanking - 383	cggaagagaaggctgagga C/T acccgggcaggaggagaa	688
GSTM1	9	5' flanking - 382	cggaagagaaggctgagga C/T ccgcccaggaggaggagaa	689
GSTM1	10	5' flanking - 378	gggaaggtcaggagaccgc C/T gggcaggaggagagaggag	690
GSTM1	11	5' flanking - 343	aggagagaagagctttgtctc G/A ttaggatctggctggtgtct	691
GSTM1	12	intron 2 + 118	tgctggagctgcaggtctgc T/C ctccctgagcccggtgag	692
GSTM1	13	intron 3 + 233	agtgtgtcccgctctctc T/C ctgctcttgcatttgggaag	693
GSTM1	14	intron 4 + 26	tgtgggtggctgcaattgt G/A gggggaaggtggcctctcc	694
GSTM1	15	intron 5 + 140	actatcagcagttattctca C/T gactccaatgtcatgtcaac	695
GSTM1	16	intron 5 + 577	ctgccaccocattagaagga A/G ctitttacttttccctgagct	696

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
GSTM1	17	intron 5 + 645	gctggctctggatccagagcc T/A gccagggtgcttggcgctcc	697
GSTM1	18	exon 7 + 519	caccgtatatttgagcccaa G/C tgcctggagcccttccaaa	698
GSTM1	19	exon 7 + 528	tttggcccaagtgcttggga C/T gcccttccaaaatctgaagga	699
GSTM1	20	intron 7 + 2421	cagcaccgtgtagaattcttc A/G taagtgttgctgttactgt	700
GSTM1	21	3' flanking + 42	atttgctcctggccatctac C/T cagactgtctgtctgtctgt	701
GSTM2	1	intron 1 + 7	ggaacatcccgggggtagc C/G agggctccgctggcggtggg	702
GSTM2	2	intron 1 + 45	gggacgggggtgcgtgggg C/T ggggaagtgtggagcagctg	703
GSTM2	3	intron 3 + 70	gactgcatctcctctcccca G/C cttagaggtgttaagatcag	704
GSTM2	4	intron 3 + 224	agcaggccctgggtctcctct T/C tgccttgcataagggaagg	705
GSTM2	5	intron 5 + 100	ttgattcctcttggtgagtt C/A ttggtcttgctgactctaa	706
GSTM2	6	intron 5 + 341	tcctcttgggtgggttcatgg T/C ctggctggttcaggagtgga	707
GSTM2	7	intron 5 + 696	accctttagctagacacagag C/T gctgatttgcattttacaa	708
GSTM2	8	intron 5 + 723	ttgtgcatttacaatccttt A/G gctaggcagaaaagtcttcc	709
GSTM2	9	3' untranslated + 1006	ctcagcccgagctgtcccc G/A tgttgcatgaaggagcagca	710
GSTM2	10	3' flanking + 139	ttctgctgggcatagtaagg C/T gcttgagaattcttgctccc	711
GSTM3	2	5' flanking - 144	ccaacgcggcatttagtcgc G/T cctgcgcacggccctgtgga	712
GSTM3	3	intron 7 + 165	agcctaacttctatctaccttg A/G aggcactgtctacaaaaaaa	713
GSTM3	4	intron 7 + 257	ctgttgacttggttgggttc T/G ttataagattggtgtatttt	714
GSTM3	5	exon 8 + 91	cccagtggggcaacaagcct A/G tatgctgagcaggagggcaga	715
GSTM4	1	intron 4 + 67	ttggctggattgggtgcta T/C gctcagagtgagctgtgttt	716
GSTM4	2	intron 7 + 77	gatgctttccagctctcggga T/G ctgcataaagaataacttgc	717
GSTM4	3	intron 7 + 80	gctttccagctcctggatct C/A cataaagaataacttgcatt	718
GSTZ1	1	5' flanking - 546	agcaggcccccaccagccgac C/A gcctgaagcccgctagccc	719
GSTZ1	2	5' flanking - 321	tgctgaccagccgcccgc T/C aaggagtcacaaggagggcag	720
GSTZ1	3	intron 1 + 2890	aaaaactgcatcaaaaacca G/A gccacgctctgttgggggga	721
GSTZ1	4	intron 1 + 2896	ctgcatcaaaacaggccac G/A ctctgttggggggacaccaa	722
GSTZ1	5	intron 2 + 255	ttctccaaactgctctccca A/G agcccttggcacaacctgtt	723
GSTZ1	6	intron 2 + 1560	caccactgtttaaggccctg G/C gggggcagagtttaaacacaa	724
GSTZ1	7	exon 3 + 94	ccttgaaggcatcgactac A/A agacgggtcccatcaatctc	725
GSTZ1	8	intron 4 + 297	agaaaggaggagtttgcctggc C/T ctgtccctcttggtccaggg	726
GSTZ1	9	intron 6 + 94	tatctgaaccagcctccagc G/A ctgcttgggctgacagttt	727
GSTP1	1	intron 1 + 269	ctcccccgggtccagcaaaa C/G ttttcttgttgcctgcagt	728
GSTP1	2	intron 2 + 134	ccccgggctctctctctgtt C/T cccgctctcccgccatgcc	729
GSTP1	3	intron 5 + 438	gtgtgtgcgctgctgtgc G/A tgtgtgtgcgtgtgtgtgtg	730
GSTP1	4	intron 6 + 162	cccgctggctgagtcctctag C/T cccctgcctcgagatctc	731
GSTT1	1	5' flanking - 103	taaaagtgttccagggctgc C/T gtgcgcgccaaatggggcaca	732
MGST1L1	1	5' flanking - 105	tgctgcgctgctcgtggggc G/A gggcgtggcggtgtgctgct	733
MGST1L1	2	intron 1 + 277	agtgtctgtgagagaagcag G/A ttctggaggttgaggtgtgg	734
MGST1L1	3	intron 2 + 8030	ggggttatcacagagcccttc C/G gccccaccacacatatgca	735
MGST1L1	4	intron 2 + 8499	gtatggcaggagtggtgggtcc T/C ggcaagccatagaggtatgg	736
MGST1L1	5	3' untranslated + 468	cgccacctgtgaccagcagc T/G gatgcctccttggccaccag	737
MGST2	1	5' flanking - 46	gtcagcattcaaaagtcag G/A agcgcatttatcttccctg	738
MGST2	2	intron 1 + 176	ggtaaccatgcgcctgct A/C ccctccttcccaggggcaag	739
MGST2	3	intron 1 + 204	tcccaggggcaagcagagac T/C gagaacattccagagattag	740
MGST2	4	intron 1 + 373	ttacaagtgttccaaaggaa A/T cgtgcctgcttctaaacctg	741
MGST2	5	intron 2 - 3245	ctcctgtatttggccacctc G/A gcctcccaaaagtgtctggat	742
MGST2	6	intron 2 - 1998	aggccgaggttggcgcatca T/C gaggtcaggagatcgagacc	743
MGST2	7	intron 2 - 1640	tgtttattccttgcataagcc A/G taataataaagtatgaatttt	744
MGST2	8	intron 3 + 41	actgtgttctaattgatgact A/G tgaatgcttaaacgattaagg	745
MGST2	9	intron 3 + 453	atcagagtgtatgttgacag A/G tatatgaactttggcttcat	746
MGST3	1	5' flanking - 520	acaaaaagggccctaaacgagc A/C taaatcattcacttccggga	747
MGST3	2	5' flanking - 355	cgccctaaaccgctacaggtg G/A ctctgtgggggacaaattat	748
MGST3	3	5' flanking - 234	ctgggggagtagatatatgt T/A ttggaagttagaggagtaa	749
MGST3	4	intron 1 + 74	agccttggcgaggcaactcc C/T atatttcagcctatgcgagc	750
MGST3	5	intron 1 + 682	agaaaatgccctcttctttat G/C tggggtggcagcagcgagcc	751
MGST3	6	intron 1 + 832	cgagtttacaagtacataaa T/C agcgtcgggggcaagtaagt	752
MGST3	7	intron 1 + 1919	aataaaattcctgagtttct G/C tcactcgtcttaccagtacc	753
MGST3	8	intron 1 + 1991	tgttaattaggcaacagggaaa A/G ttgtactatctttcaattgc	754
MGST3	9	intron 1 + 4458	tttccatctctcotaacata T/C agtttagcttccactctccaa	755
MGST3	10	intron 1 + 4676	tgaatatgcaatgcaattgt C/G ggggagtagttacttttcat	756
MGST3	11	intron 3 + 278	cagcatgaccatctataacc G/C atgttgactctccagggcct	757
MGST3	12	intron 4 + 423	cttgccctttttgttgggg G/T tgggggtgggtcacagagaag	758
MGST3	13	intron 4 + 506	gtgcagagaagaaaaaag T/C ggggaaggttgaaaggggat	759
MGST3	14	intron 4 - 162	tcacagatattttattttcc C/T gactgaactaacttaattc	760
MGST3	15	intron 4 - 130	acttaattctacctaatttg C/G tggggagtagttggccaaa	761
MGST3	16	intron 4 - 105	ggagtagttggccaaatcat C/G aaattgttaactttttgcta	762
MGST3	17	intron 4 - 65	aacatattgtgtaatacaacc C/T taggtgttaaaaaagggttg	763
MGST3	18	intron 5 + 105	atcccgacactttggggggc G/C aaggcaggcagattgcttga	764
MGST3	19	intron 5 + 197	aaaaaatacaaaaattagcc G/A gatgtgtgtgtgcacacctg	765
MGST3	20	intron 5 + 222	tgggtgtgcacacctgtagt C/T ccagctacttggggagctga	766
MGST3	21	intron 5 + 374	ttttatgctactatattttt T/C ttcttgggaattttgagaaaa	767
MGST3	22	3' untranslated + 517	atgacttaccctttatttcca G/T ttacatttttttctaaata	768
MGST3	23	3' flanking + 166	agtctgattgtgtgtagta G/T gtatagtcattgccacagtg	769
GSTA1	1	5' flanking - 266	ttgcaaaaagagcaaaatct C/A ggtgaaatgtattgtgtaa	770
GSTA1	2	intron 2 + 1220	gagacacaggcttttccaaag A/C tatgacaacaccataactag	771
GSTA1	3	intron 4 + 1813	aaaggcaccactggaggtg A/C attattttgccatcaacctga	772
GSTA1	4	intron 5 + 732	gaagagtggtgtcatgaagg T/C ggaagtcaactcccaaggag	773
GSTA1	5	intron 6 + 333	ttatcccatatgtgccaca A/G tgagccggtctgagcagagc	774
GSTA1	6	3' flanking + 412	ctttcttatgcaatttgcaaa A/C caatgatctctgtctgtg	775
GSTA4	1	intron 1 + 280	cgatttgggaaggtgggct C/T ggaatgcctcccgggcctggc	776
GSTA4	2	intron 3 + 176	ggaaatcaacttctatttcaa T/C agttccataaaagctggccg	777
GSTA4	3	intron 4 + 94	acaccacatttacttttatgt C/G ttacatagtttagtgatca	778
GSTA4	4	intron 5 + 1062	cacacitgtgcacatgcaga C/T acccatggcatccaagagt	779
GSTA4	5	exon 6 + 487	cagatgtgattttactccaa A/G ccatttttagctctagaagag	780
GSTA4	6	intron 6 + 595	tgagctctgagagcaaatga G/A agatgttagcaccctaaaca	781
GSTA4	7	intron 6 + 630	taaacatcaccccaaggat T/A cctaccattctctcttgag	782
GSTA4	8	intron 6 + 3943	tcttcgtagtatctaatacc T/C tttttgttagccttaagtt	783

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
GSTA4	9	3' untranslated + 1099	taataacaacgaatgtcta G/A taatgactctccctgagc	784
GSTA4	10	intron 5 + (370-371)	gttgctgaacagctgtctca (TA) gctgacatccctcgataa	785
GSTA4	10	intron 5 + (370-371)	gttgctgaacagctgtctca gctgacatccctcgataa	786
NDUFA1	1	5' flanking - 1437	aggctcaaaaatcctgatta T/A acctacattgaagcttttaa	787
NDUFA1	2	intron 2 + 3071	aaataaagttacatggcatat C/A tttagtgggaacagacttgt	788
NDUFA1	3	3' flanking + 1218	aactccatgtgtataaagca A/G caccacagatgacacttcca	789
NDUFA1	4	3' flanking + 1411	ggattgtgccatcccttgat C/T/G ggcaatgacattttactttt	790
NDUFA1	5	3' flanking + 1411	ggattgtgccatcccttgat C/T/G ggcaatgacattttactttt	791
NDUFA2	1	intron 2 + 1087	aacatacaaaaattagccgg A/G tatgtggcgggacactgta	792
NDUFA2	2	intron 2 + 1089	catatacaaaaattagccggat A/G tgggtggcgggacactgta	793
NDUFA2	3	intron 2 + 1356	ttccctgaacaacccattg T/C ggccatccagaatcagccaa	794
NDUFA2	4	3' flanking + 467	cacagcctcatgggtcagcc C/T actccagagggtgcattccc	795
NDUFA2	5	3' flanking + 744	ggaagcaggggccctggcca C/T agcccgctggcagtaagcagg	796
NDUFA2	6	3' flanking + (844-845)	tatagtctacaagaatgaa (ACAC) aaagatcatacaaatagcta	797
NDUFA2	6	3' flanking + (844-845)	tatagtctacaagaatgaa aaagatcatacaaatagcta	798
NDUFA3	1	intron 2 + 2656	tcctgtgctccctccctg G/A cactttatcttcccttgcc	799
NDUFA3	2	exon 4 + 241	agggccccagcctggagtg C/G tgaagaactgtgagcact	800
NDUFA3	3	3' flanking + 1019	tccttacctgcactggcacc A/G gctctggagcccgactccct	801
NDUFA5	1	intron 3 + 2155	agactctagcatgtgtacctg C/A aacataagttccttagaaa	802
NDUFA5	2	intron 3 + 2493	ggcatattgtagtattttc G/T gttcaatttcacatctat	803
NDUFA5	3	intron 3 + 2712	acaaaatttgactgttca C/T taacacaggtttttctgaa	804
NDUFA5	4	3' flanking + 1296	aggtatctaaaaggtattg C/A atttggtcattgtttcttc	805
NDUFA5	5	intron 3 + (30-31)	aagtcagttttgtgtcttg (GATTGTGGTATCCAG) tgtaa	806
NDUFA5	5	intron 3 + (30-31)	catttaacaaaaaa tgtaa	807
NDUFA5	6	intron 3 + (427-428)	attaaagtagcagtttaataaa AG/Δ tctagactgtgattcatat	808
NDUFA5	7	intron 3 + (4733-4734)	tataggaatttttaataata TA/Δ ggatattgaacattcagtt	809
NDUFA6	1	5' flanking - 1148	tttataatttatatattgta C/T gtgtttctttttgtatagct	810
NDUFA6	2	5' flanking - 363	actaccaaggagcgcggcg G/A cagccggatagcaggagct	811
NDUFA6	3	exon 1 + 26	ggggagcggcgctcccgca C/T tacttctaccgccagcact	812
NDUFA6	4	intron 1 + 1318	attcagcagtttgaaacat A/G atgtttgcctggcagaatc	813
NDUFA6	5	intron 2 + 562	agttaaagaattctgaaagt G/C tcagaatgatttaccctga	814
NDUFA6	6	5' flanking - (861-862)	ctgtaaaatgggatgctga (T) ggtacctacctgacctatga	815
NDUFA6	6	5' flanking - (861-862)	ctgtaaaatgggatgctga ggtacctacctgacctatga	816
NDUFA7	1	5' flanking - 731	accaccaaaggctctatcaa A/G ggggtgtctctttgacccc	817
NDUFA7	2	5' flanking - 434	aaagggaaccatcagaaacc C/T gtgatgaatgagaatcgcc	818
NDUFA7	3	5' flanking - 395	gtcccggtattccggctggc A/G ggggttagggcaggtagag	819
NDUFA7	4	5' flanking - 100	agaggagtcacgtgcttcgg G/A gagagcctttataggacgtt	820
NDUFA7	5	intron 1 + 92	tcacctccctctaaagccgg G/A acccttgcctctcccgcaat	821
NDUFA7	6	intron 1 + 133	ctccctgggaacccccagct A/C gtcaacccctcagccccgga	822
NDUFA7	7	intron 1 + 136	cctgggaacccccagctagt C/G accccttcagccccggagcc	823
NDUFA7	8	intron 2 + 89	tcctttagaccctgaaac G/C agggctgacatccctgccac	824
NDUFA7	9	exon 3 + 196	gccgccgggaatctgtgcc C/GL ctcccatcatcatgtctgc	825
NDUFA7	10	intron 3 + 4203	gctccacccctggggcgcc T/G cctccatcacccacccctcc	826
NDUFA7	11	intron 3 + 4604	gggctctgtgtacgtggag A/G ccaaaagtgggaaggagga	827
NDUFA7	12	5' flanking - (1360-1353)	aggggtccagggtccctgct (CAGAGGCT) aacactggccg	828
NDUFA7	12	5' flanking - (1360-1353)	aagagaaag	829
NDUFA7	13	5' flanking - (1240-1239)	aggggtccagggtccctgct aacactggccgaagagaaag	830
NDUFA7	14	intron 2 + (4142-4143)	tgatagagccctgatccacc CA/Δ ctctctgaaacttctttgct	831
NDUFA8	1	intron 1 - 75	cattttgtgactgaggtgac AG/Δ gggccacagcggggccatg	832
NDUFA8	2	intron 2 + 790	tttgtgtctctattctgac C/T cgcattgaggtaagctgaga	833
NDUFA8	3	intron 2 + 900	caaaccctagacaaagtgtgc C/T cttatccagaagttagcag	834
NDUFA8	4	intron 2 + 3837	ttcaggagataaaaagctct G/A attgctcaggcctgagatgg	835
NDUFA8	5	intron 2 + 3942	gaagtgtctgttaagttag A/G taagaatattgtactcacata	836
NDUFA8	6	intron 3 - 66	tcattgttttgcaaaagat G/T cccctaaccagctttcttt	837
NDUFA8	7	3' untranslated + 520	gaggagacaccaggagggcg A/G ttgatgggtacagattctct	838
NDUFA8	8	3' flanking + 367	tttattttgtgacaaagtaa A/G gatgggtccgtggcccacac	839
NDUFA8	9	3' flanking + 777	gtcatacaaggggagccctc A/G ggatagaagtgcagaactt	840
NDUFA8	10	3' flanking + 1053	attcttttttcaactactagg C/T tgtttctccacatctgact	841
NDUFA8	11	3' flanking + 1190	aaagaaaaagcactgtgtga T/A ctgccatggccgcttctgca	842
NDUFA8	12	intron 2 + (449-453)	gattctctaataaataataa G/T acttttttttgcattttttt	843
NDUFA8	12	intron 2 + (449-453)	ggtcattgtgcatgatacttaa (GTAA) aaaaaactaagctgtgta	844
NDUFA8	13	intron 2 + (707-708)	ggtcattgtgcatgatacttaa aaaaaactaagctgtgta	845
NDUFA8	13	intron 2 + (707-708)	ctcatttttggaaagactctc (A) accttgcgtgacaaaaatg	846
NDUFA8	13	intron 2 + (707-708)	ctcatttttggaaagactctc accttgcgtgacaaaaatg	847
NDUFA8	13	intron 2 + (707-708)	cagcaccctgttagagccctc G/A ggtgctgaagatgccatga	848
NDUFA8	13	intron 2 + (707-708)	gacacaggcattctgcagac G/A ctgacaaatttttagtgcag	849
NDUFA8	13	intron 2 + (707-708)	gatggctcttttagagacaa T/G gcagattctcaaaagtgacc	850
NDUFA8	13	intron 2 + (707-708)	accacagtttaagaaaaaat T/C acaagccattgctgtagaga	851
NDUFA8	13	intron 2 + (707-708)	caacacccattttgtttct C/G ttctccacttttccctcgt	852
NDUFA8	13	intron 2 + (707-708)	ttccctctgtttctgtcccc C/T cttttctctctctgtggccc	853
NDUFA8	13	intron 2 + (707-708)	attcatatgagcacaatgga A/G atgataattatacaatacca	854
NDUFA8	13	intron 2 + (707-708)	ggcttgatgttcagccctgag G/A caagaattaggaggttttag	855
NDUFA8	13	intron 2 + (707-708)	aagtatccaaaaagagattc T/G cattctgcatatgaagaa	856
NDUFA8	13	intron 2 + (707-708)	gacaaatataaattactaag G/A tcatttttaggaggtatagg	857
NDUFA8	13	intron 2 + (707-708)	aatttcttccagaattggac C/T aaaggcatcctctgttccca	858
NDUFA8	13	intron 2 + (707-708)	ctctctggttaattatcatat A/G gattattgttaatcccttta	859
NDUFA8	13	intron 2 + (707-708)	ttctctagttctttgtccct C/T aagtttgtgtgtaacctgt	860
NDUFA8	13	intron 2 + (707-708)	agaaaatagtcattgaatggc C/T ccaactaacactagcttta	861
NDUFA8	13	intron 2 + (707-708)	gtcatttgattacctgagta A/C agtgactgttacctgtttg	862
NDUFA8	13	intron 2 + (707-708)	attttataaattcttttgatg A/C cttgggggttcttattcaact	863
NDUFA8	13	intron 2 + (707-708)	attgtgtagatgaatgacac C/T agagctgcaacttttttaa	864
NDUFA8	13	intron 2 + (707-708)	gcagagctgtcaactttttt A/T aaaaaataatttttagcttaa	865
NDUFA8	13	intron 2 + (707-708)	ttttttaaaaataattttt A/G gcttaaaaaataaaaaatt	866
NDUFA8	13	intron 2 + (707-708)	atcattgtgttttaaaagtt T/C aagtagtgttaatttcagta	867
NDUFA8	13	intron 2 + (707-708)	aaccaatccctttatttttt A/T tcttccagaacttttgatt	868



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
NDUFA9	20	intron 5 + 161	gggtgtgtgtatgtttga C/T gtttgattgattgccttct	868
NDUFA9	21	intron 5 + 373	ctttctcacccttgcaactg C/T agtggttttgtgccactctt	869
NDUFA9	22	intron 5 + 457	gccagggaagatgcctattc A/C cacagtgttatgctccttt	870
NDUFA9	23	intron 5 + 3113	gattttttctcctttctcaat G/A taagcttcccttaaaataaa	871
NDUFA9	24	intron 5 + 3339	tctaaactcaaacaggttt G/A tttgtttattgtttaggctg	872
NDUFA9	25	intron 6 + 414	tatagttttgccttttccag G/C atattacatatattggttaga	873
NDUFA9	26	intron 6 + 518	ctttcatittcttttcatagc T/C tgatagctcatttctttata	874
NDUFA9	27	intron 7 + 974	ggattatgcgtacttgaaaa A/G tacttgtagtagcgtgatta	875
NDUFA9	28	intron 8 + 368	acattaattttgatggagta T/G cacaatgcctccagaggctg	876
NDUFA9	29	intron 8 + 954	gcattgcaatcagttatatag T/C ctatagaagaattacaattc	877
NDUFA9	30	intron 8 + 1253	tcctcttgaattgttagata G/T gtatctacacatttctcatc	878
NDUFA9	31	intron 8 + 11608	gaaaagatagatgtataaat G/A accaaaaattcgtgaagaaa	879
NDUFA9	32	intron 8 + 11930	ctacaaatatattctataat G/T gtaatcatggtataagtaaaa	880
NDUFA9	33	intron 9 + 1998	tgtttttcaagccttttaaac G/A gctgtggaacctgtgtcoa	881
NDUFA9	34	intron 9 + 2238	ccagctacttggggagctga A/G gtggggagatcacttggccc	882
NDUFA9	35	intron 9 + 2885	acagcgtctgtcttctccg A/G gtctcataggttagcttacc	883
NDUFA9	36	intron 10 + 801	tacactaaagtgtcttcttacc G/A ttatcacttgagaaagtgtt	884
NDUFA9	37	intron 10 + 910	tgacagctttcaggtgggta G/C gataggaggtgtgtgtct	885
NDUFA9	38	intron 10 + 1180	aaaaactgagtcagaaacgccc G/A tgctcagaaacagggcgct	886
NDUFA9	39	3' flanking + 554	gtgccagcacttaggaatta T/G gaccttctaataagattctt	887
NDUFA9	40	5' flanking - (1129-1128)	taaacagtaggggcaagata (TC) gagtggaaacagccaagatt	888
NDUFA9	40	5' flanking - (1129-1128)	taaacagtaggggcaagata gagtggaaacagccaagatt	889
NDUFA9	41	5' flanking - 341	tggtttctcttctccacttt T/Δ cccctcgttcttgcctccccc	890
NDUFS1	1	5' flanking - 3	tcctagggggtcgtctgtgt G/G cagacagtttagcagaacag	891
NDUFS1	2	intron 1 + 445	gtgttagcaatggctcaccg T/C tctgtttgtgtccttgttt	892
NDUFS1	3	intron 1 + 470	ttttgttctcttgtttgttt G/T gtccattgaccacgttggac	893
NDUFS1	4	intron 1 + 502	acgttggacagcattttttt A/G ttcttttaactaacgggaaa	894
NDUFS1	5	intron 1 + 557	ttttgaaaagttagccacag G/A ttgcattgcaataacaaaa	895
NDUFS1	6	intron 1 + 5218	tatctcagaatatctcagga A/G catttagtagacagctatgc	896
NDUFS1	7	intron 3 + 1371	aagccctaaaatagatagtg T/G caatgggaatgaaaacaaga	897
NDUFS1	8	intron 5 + 414	ttttgaaaagaggtctcact A/G tgtgtccaggctgggcttg	898
NDUFS1	9	intron 10 + 812	gagtgccgttgccgcagatc G/A atctcgggtcactgcagcct	899
NDUFS1	10	intron 11 + 233	ggagcccaaggcagggcagat C/T gcctaagtgcaggagttaga	900
NDUFS1	11	intron 11 + 283	ggccaacatggcgaaccccc G/A tctctactaaaaatacaaaa	901
NDUFS1	12	intron 11 + 585	ctgtatgtcttaatttttaa G/T taaattgtcattttatatat	902
NDUFS1	13	exon 12 + 1251	gcaccactgttttaagtctag A/G attcgaagagggttggtaat	903
NDUFS1	14	intron 13 + 5159	attacttttagaaaaacgtgt T/C ttactgtactactcaggcata	904
NDUFS1	15	intron 14 + 250	aaaaattgttatattagtta C/T acctgtgttcaaaattgca	905
NDUFS1	16	intron 14 + 550	gataaagtctcactatgttg C/T ccaggttgatctcaaaactcc	906
NDUFS1	17	intron 14 + 2429	ctgaaaatacaaaaatttagc C/T ggggtgggtggcattgtcct	907
NDUFS1	18	intron 14 + 2530	ttacagttagcagagatcac G/T ccactgcgtccagcctggg	908
NDUFS1	19	intron 14 + 2659	acacatttaattttttacat T/C gaaaatactgcagttatgtt	909
NDUFS1	20	intron 16 + 150	agaaaacatgtattcagaaa C/T aggaattcaaggttacagtg	910
NDUFS1	21	intron 18 + 279	cactgtgtagcaatttatgg T/C gaattttccaaagtggcaaa	911
NDUFS1	22	3' flanking + 182	tctaggataattataattaa T/A aataatcatagtaacaattgg	912
NDUFS1	23	intron 11 + 3226	aaatgtattgtctgtgttt T/Δ aacattttgttaattagtaaat	913
NDUFS3	1	5' flanking - 194	tctgccacaaggagcttagga C/T cagctcaccctcagatttc	914
NDUFS3	2	intron 1 + 46	cggggtcaggcgcagcgccg T/C gccagtgccagagagctcct	915
NDUFS3	3	intron 6 - 439	aaagctgtgtcaaatgtact G/A ctttagatctggactgtgaa	916
NDUFS3	4	intron 6 - 280	ggtgggtgagcagtcagttc G/A gagctcctgatgtggagtg	917
NDUFS4	1	5' flanking - 439	aaactgaatacagccctgtcc T/A gagggttgcgaagtgaatc	918
NDUFS4	2	intron 1 + 1829	gaaaaaaaatcttaattgcca G/T ggaagacgttttttaaatac	919
NDUFS4	3	intron 1 + 2057	attaattgggaaatctacat C/G taaaattcattttattgtaa	920
NDUFS4	4	intron 1 - 521	ttcatttttaactaattttat T/G tctccatttttgaatggg	921
NDUFS4	5	intron 3 - 1259	ataaaaattatgatattatta G/A tactaatatagccagccata	922
NDUFS4	6	intron 3 - 1174	aatatataataattatagaa T/C ctacagtagtaacacattgtt	923
NDUFS4	7	intron 4 + 10682	cacaatataggcacaaactt A/C ctaccaaaagcactaacaagt	924
NDUFS4	8	intron 4 + 12299	tttactatatagatattagg A/T atagactatagagtatctct	925
NDUFS4	9	intron 4 + 12560	accaataaaggtattatgca G/A gctcatctttttatataaga	926
NDUFS4	10	intron 4 + 18801	ggaagacgttctttggccag T/C gtatccgaaacctctgttat	927
NDUFS4	11	intron 4 + 19888	tcgcacagctgagaagaca A/G ggggctgttttcagtaacc	928
NDUFS4	12	intron 4 + 20178	agaaaagatgagtataattc G/A tctaacttaccattcttaa	929
NDUFS4	13	intron 4 + 23016	ctactctgtgaagtaaggt T/A atgttgaacaagtaaataa	930
NDUFS4	14	intron 4 + 23124	actttctttggagatggagt T/A ccagcagttgggaatgtaat	931
NDUFS4	15	intron 1 + 766	tgtgatgatttttttttttt T/Δ ggctgtattaaaccttccatt	932
NDUFS4	16	intron 1 + 1261	ttttcttcttttttttttt T/Δ gagatacattctcactctga	933
NDUFS5	1	intron 1 + 388	ccaaacatagccagcaattc C/T ggctgttaactccgggctgtt	934
NDUFS5	2	intron 1 - 13082	agtgagccgagattgcacca G/A tgcattccagcctgggcaac	935
NDUFS5	3	intron 1 - 12905	gttttcaacaaaggactcca G/T agtagtagagaagtttctgt	936
NDUFS5	4	intron 1 - 12564	attttcatcacacctcaact T/G aaggtataacagccttaaga	937
NDUFS5	5	intron 1 - 12561	ttcatcacacctcaacttaa G/A gtataacagccttaagaatg	938
NDUFS5	6	intron 1 - 10561	aacaatgtgtatagtgggg C/G ggggtgtgagcaggtgtcat	939
NDUFS5	7	intron 1 - 9065	ctgatgtctctggctccag G/A gtacagccttttccctttaga	940
NDUFS5	8	intron 1 - 8871	tcaccacgtgtctgtagata T/C aggaccgcagaccttcgctt	941
NDUFS5	9	intron 1 - 7312	aaatccttggcttctagaa G/T ggtcactgatggtatataat	942
NDUFS5	10	intron 1 - 6827	aacctctgcctcccagattc A/G cgcaattctctcgtcctcagc	943
NDUFS5	11	intron 1 - 6725	agtagagacggggttttccac G/A ttttagccagcaggtctcg	944
NDUFS5	12	intron 1 - 6631	aggcgtgagccactgcgccc G/A gcttagaccttcttcttata	945
NDUFS5	13	intron 1 - 6531	cccaacagctcccaatgtaa A/G acagatcttaataattctg	946
NDUFS5	14	intron 1 - 6346	gcaacagatcttgacctata T/C cccatagggtacagctgagg	947
NDUFS5	15	intron 1 - 6327	atccatagggtacagctga G/C gactttaatcagaaaaggag	948
NDUFS5	16	intron 1 - 6122	tagccttgccttttactctac T/C gttcctcccaaatccacccc	949
NDUFS5	17	intron 1 - 2512	acaaactcttaatgcgaatt T/C tgcagatcaaaagtggttta	950
NDUFS5	18	intron 1 - 1945	tttaactccttttaatttc G/A caatttcacaacctagggtta	951
NDUFS5	19	intron 2 + 75	tttttttttttttttttttt G/A aagttcactcttcttccct	952
NDUFS5	20	intron 2 + 148	ctgtagcctctgcctccag G/A ttcaggcatttcgctacct	953
NDUFS5	21	3' flanking + 150	cagattcaagtgttctct G/C cctcagcctcccaagtagct	954

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
NDUFS5	22	intron 1 - (10682-10681)	attataaacactaacaac AT/Δ gtgtgtctcttttagagggg	955
NDUFS5	23	intron 1 - 10272	aggaacaagtgtactaccctg A/Δ aaaaagaagagatgaacaa	956
NDUFS5	24	intron 1 - 2069	accagacagagttcccttta C/Δ ttgttttctgtggcaaa	957
NDUFS6	1	intron 1 + 26	ggccgtctgggtacagatgc A/C ccttctccagccgcacctc	958
NDUFS6	2	intron 2 + 1076	ggatcatgtgtgtggaggg G/A gcttgtgtctgtgtgtgtt	959
NDUFS6	3	intron 2 + 1260	cagttgtcagtaagtgtgt T/C atagggttaagtgtctttct	960
NDUFS6	4	intron 2 + 1413	caaaaggagctcatggcattg C/T gaatgggacattttctccgt	961
NDUFS6	5	intron 2 + 1568	tggagaaggggggttttctc I/C tagtggatgcgggtatggt	962
NDUFS6	6	intron 2 + 1692	gacccgtgtgacggaggttt C/T ctgggcatcgatgggtgtt	963
NDUFS6	7	intron 2 + 6488	tagcttaataattatttggc A/G ttcatgttcagaatgcctga	964
NDUFS6	8	intron 2 + 6563	tttaaaccttttttttaaat G/A tccatgaatggggctgggtat	965
NDUFS6	9	intron 2 + 6740	aaagatttaaacctacatat C/T ttatggccaatcatttga	966
NDUFS6	10	intron 2 + 6832	gcggggagactcattttacag A/T ggttggacattcactgtgt	967
NDUFS6	11	intron 2 + 7054	ttcactgcccggagcttggcc G/A tgtgaaccggagccgggct	968
NDUFS6	12	intron 2 + 7186	ggtcagggttcaccccttggc T/C gcgcacactaaatgacggga	969
NDUFS6	13	intron 2 + 7225	gagggcatcccgctcagtc G/A ccagtgtcagggcgtcagca	970
NDUFS6	14	intron 2 + 7810	cttcactctggggcgggga C/T gctgtagaaggagcacaag	971
NDUFS6	15	intron 2 + 11080	gttaactgttcagtgctttct C/T ctttggatttcattgaatc	972
NDUFS6	16	intron 2 + 11657	ggacagaaacgtgtgtgtg G/A gagaagagggtcgtgcagag	973
NDUFS6	17	intron 3 + 208	cgaaaacccctttcaactg T/C gaagtgtggcgccgcatgtt	974
NDUFS6	18	intron 3 + 1031	ctagatgggagctgggcacc C/T ggcattgtccctctcgtgct	975
NDUFS6	19	3' flanking + 270	gcttcagagagccaaagggtg G/A tcttggagtgcatagtgaag	976
NDUFS8	1	5' untranslated - 45	agtgtagcctccgctcccg A/C ttgactggcctgcttggcaa	977
NDUFS8	2	intron 1 + 163	aggtgcagggggagccggc T/C ctgagggcgtatgcggcgc	978
NDUFS8	3	intron 3 + 123	ttctgagcctgtttccact T/C ttaaaatgattatgggtgat	979
NDUFS8	4	intron 6 - 505	aggcaaggcagggccgggac G/A gtggctcagcgttgaatcc	980
NDUFS8	5	3' flanking + 491	ggccgtgagctggcctgcgt C/A cagccacatcctcttctctg	981
NDUFS8	6	3' flanking + 693	ttcacttctatttcagtgag G/A aaaccagctccgagaggtga	982
NDUFS8	7	3' flanking + 1267	ttttccagacgttaaccgc G/A tcagagcgtggcatggagcc	983
NDUFS8	8	3' flanking + 1362	cgctgggtttcttcccttac C/T gtggctccacaggcattac	984
NDUFS8	9	3' flanking + 1449	tgtcagaacaggcctatggc G/A cccaacacaaagtccccaa	985
NDUFS8	10	3' flanking + 1572	cagccccacagccctgtgct C/A gctgtgtgggcttagggat	986
NDUFS8	11	3' flanking + (783-784)	cagagaccttgaccccccc (C) atccatcattttccaaaa	987
NDUFS8	11	3' flanking + (783-784)	cagagaccttgaccccccc atctaccatcatttccaaaa	988
NDUFB3	1	5' flanking - 1439	ttaaaagtgtactttttct G/A ccgggacgggtggtcacgc	989
NDUFB3	2	5' flanking - 1436	aaagtgtactttttctgccc G/A ggcacgggtggtcacgcctg	990
NDUFB5	1	5' flanking - 213	ggcgatgaaactctctctac A/C aagaaggccaaacccggcg	991
NDUFB5	2	intron 1 + 6288	ggggatgttgattaccatgg T/C cagtaaaagtaaaaggcat	992
NDUFB5	3	intron 1 - 1581	ctctgggccaactgtatct A/G ttttttccctgtttaccct	993
NDUFB5	4	intron 1 - 1487	ccctcttagaccgttatatag T/G tctagcataggatctgcaca	994
NDUFB5	5	intron 2 + 556	ttgtctggaccatctgccac G/A gtatagaagctctgaatca	995
NDUFB5	6	intron 3 + 467	ggcgccatcgcactccagcc C/T gggcaacagagtgagactc	996
NDUFB5	7	intron 3 + 497	agtgaagactctgtcccccc C/G caaaaaaaactataatct	997
NDUFB5	8	exon 5 + 397	atgatagtcctgaaaagata T/C atgaagaacaatggccgtc	998
NDUFB5	9	intron 1 + (231-215)	attagcatttttaaaacgtt GTT/Δ attcaccatcccaattaatg	999
NDUFB7	1	intron 1 + 68	cctgaacacctggaccccca G/A ggcctggaccccgagggctgg	1000
NDUFB7	2	intron 2 + 266	gggctctctaggggctgtgt T/C gatgggagacaggccaggtgg	1001
ABCA1	1	5' flanking - 278	gggcccggggcgggggaagg G/C acgcagaccgcggaccctaa	1002
ABCA1	2	5' flanking - 99	acataaacagagggccgggaa G/C gggcgggggagggggagag	1003
ABCA1	3	intron 1 + 159	gcgggtttaaatggggagag G/T atgtcttagtacgagctctg	1004
ABCA1	4	intron 1 + 506	gaatttgctatatgtccccc G/G gaactggagcggcacagtcc	1005
ABCA1	5	intron 1 + 5897	gtacaaaaccccttttagcttt I/G gcaaacctcctttaagacc	1006
ABCA1	6	intron 1 + 5929	ttaagaccctgtttaaatgc C/T tccctctcatgaagctctt	1007
ABCA1	7	intron 1 + 5962	aaagctcttctggatccact T/C ttcccatcactaaagttgaa	1008
ABCA1	8	intron 1 + 5985	cccatcactaaagttgaaagt A/C agatccctctctctttactt	1009
ABCA1	9	intron 1 + 11416	ttacagtgccctttatagga G/A agaaagaagaattgtgtct	1010
ABCA1	10	intron 1 + 11935	ttctgtggagcaaatagag G/A gctgtgtgacactgtgttcc	1011
ABCA1	11	intron 1 + 12281	gaatgtttgatttgaataa I/A cttaataacagtagtttttt	1012
ABCA1	12	intron 1 + 12924	gtgtgacaattcttatact C/A aggttgaacctccggggaag	1013
ABCA1	13	intron 1 + 13002	gagcctcaatcacagattct C/G tctagctcacatgaagttaa	1014
ABCA1	14	intron 1 + 17715	ggagcatgactttgtggaag C/T ctctcctctccaccagag	1015
ABCA1	15	intron 1 + 17848	gagggctgactgtccacctt T/C gataggagccagcactaaa	1016
ABCA1	16	intron 1 + 21384	gtgggtgggggaattggag G/C aggaagcgttgccatagttg	1017
ABCA1	17	intron 1 + 22145	gtagcttctaatacaacgaa C/G tgattcctggagagcagctt	1018
ABCA1	18	intron 1 + 23063	ggaggcacctgtgacaccca G/A cggagtagggggcggtgtg	1019
ABCA1	19	intron 1 + 23131	agttgtcatatgtgtgacc G/A tgggagcgtgtttgtcggtt	1020
ABCA1	20	intron 2 + 156	ggacacaggactgtgtgtgtc T/C gcatatggcatgtggcttat	1021
ABCA1	21	intron 2 + 384	gctgtgtgtgaagtgaatta A/G tggccaccactcttagagatc	1022
ABCA1	22	intron 2 + 1081	agtgcagccaaattgcaaa G/A tcataccattcaaatataa	1023
ABCA1	23	intron 2 + 2801	aagaaaagtgtatttttca A/G gttgtgatgttagattgt	1024
ABCA1	24	intron 2 + 2830	tgcttagattgttagagttg C/G aaagatcgtggttgcatctt	1025
ABCA1	25	intron 2 + 2856	ttcgtgtgcatctgtgtaca A/G ctgacagaactggggctcag	1026
ABCA1	26	intron 2 + 3187	tgatagctgttgcctgcagc A/G tacggacgttcattgcagc	1027
ABCA1	27	intron 2 + 3190	tagctgttgcctgcagcata C/T ggaacttcattgcagttc	1028
ABCA1	28	intron 2 + 3194	ttgtcctgcagcatacggg C/T gttcattgcagtttctgt	1029
ABCA1	29	intron 2 + 3204	agcatcaggacgttcatggc G/A cagttcctgtctcctgagat	1030
ABCA1	30	intron 2 + 3401	acataaagcctgtgtgtgtc T/C gccaggaagactagaacgc	1031
ABCA1	31	intron 2 + 13927	gtcaccacatacctggcact A/G tgctaaagctgggaatgcag	1032
ABCA1	32	intron 3 + 4163	ccagccacttcatcttacc G/A tagttaaccttagagtat	1033
ABCA1	33	intron 3 + 4262	tgtcaaaagagaaactaagg A/C gccagggactttctgcttag	1034
ABCA1	34	intron 3 + 4306	ccctctcatcacttctccaa C/T gctgtatcatgaacccat	1035
ABCA1	35	intron 5 + 240	gacagaagaaaagtcocccag G/A gaagaatactacagacttgg	1036
ABCA1	36	intron 5 + 490	gatgggcatttgaactgttt G/A tcttttaaaagtgaatctt	1037
ABCA1	37	intron 5 + 583	tatctggggagtgggcattt I/G ctgactgagggcattggctgc	1038
ABCA1	38	intron 5 + 1051	ggctacaaaactgtgttct C/T ttgggcagtaaaagggcaa	1039
ABCA1	39	intron 5 + 3051	tagagaacaagtctaattct G/A ttttcttgaatagtgcga	1040
ABCA1	40	intron 5 + 3127	aagtccatgatttttaggc A/G aaatggcctcttttctctt	1041

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA1	41	intron 5 + 5924	ctttttttcacaaaattgcc C/T cccagagcttttctggaaggg	1042
ABCA1	42	intron 5 + 6831	ccagtccctcagccttgcca T/C tgccttatgctggtctggaaa	1043
ABCA1	43	intron 5 + 12678	gtccaccgctctgctcacc G/C accctctggccatctcctct	1044
ABCA1	44	intron 5 + 14214	cagcttggctccagaggccct G/A gacctgggtccagaggctcc	1045
ABCA1	45	intron 5 + 14257	gctggttccccggcttgct C/T cagaggccctggatgtgtggc	1046
ABCA1	46	intron 5 + 18078	cttaccacaccatgcacgtg C/T acagccaagggtttgtgact	1047
ABCA1	47	intron 5 + 18795	ctgggctcttccctggacctg G/A ccagctaaaaggaatctcc	1048
ABCA1	48	intron 5 + 18948	gcattggtggtactaagaac G/A catattccctatcctatagg	1049
ABCA1	49	intron 5 + 19053	ctccccaacattaaaagt T/C aagggtgcttatttcaaatg	1050
ABCA1	50	intron 5 + 19148	ggcccaagaactgcatttt C/A gcatgctccctaaatgaagc	1051
ABCA1	51	intron 5 + 19229	atgctaacagtgtagatga C/T atgtgtgggaagcatcagg	1052
ABCA1	52	intron 5 + 19405	cttgctcaattttattctgtc T/C atataactcaatattactga	1053
ABCA1	53	intron 5 + 19534	catgtgacctcttagctcc G/A cggatttaactctgtcctca	1054
ABCA1	54	exon 6 + 474	gaacacctctctgggttct G/A tatcacaacctctctctccc	1055
ABCA1	55	intron 6 + 210	gcaacctggcgctatggcc A/C gcgtgtaaaataaaattga	1056
ABCA1	56	intron 6 + 334	acagttctgaggcaataacc G/A tggtttaagggttatgtct	1057
ABCA1	57	intron 6 + 2288	cttcttcaaggctgtgtgt G/T cactggaccagctatgaagt	1058
ABCA1	58	intron 6 + 2322	atgaagttagaattgttagg T/C ccagaaaaggcaattaaagtaa	1059
ABCA1	59	intron 6 + 2820	gtgctttgatacattctgag T/G ttcaagtaagagacctgatg	1060
ABCA1	60	exon 7 + 656	tgagctttgtggcctaccaa G/A ggagaaaactggctgcagcag	1061
ABCA1	61	intron 7 + 416	catcataaagatgacattgt G/A ggctgtcacagttggaaggc	1062
ABCA1	62	intron 7 + 471	agaccacactattttagctta T/C ttagtataaactttgcaag	1063
ABCA1	63	intron 7 + 504	ttgcaagaaaaaattccag G/A aagttttttcagcctaggaa	1064
ABCA1	64	intron 7 + 679	gctctggtgaaattctctc G/C ctaccccaaacatcatcatt	1065
ABCA1	65	intron 7 + 1740	acaaatgctcaccctttcag C/T tggaaatgattgaaatttgg	1066
ABCA1	66	intron 7 + 2122	tgattaaggtggctactacc A/G ggtgctttctgcatatctcg	1067
ABCA1	67	intron 7 + 7753	taggaattccaagctgtgaa T/C tttttactgaagctctttgg	1068
ABCA1	68	intron 7 + 8973	atggaattgttttatattg A/T ctacagattgccaatattat	1069
ABCA1	69	intron 7 + 8976	gaaattgttttatattgact A/G cagattgccaatattattag	1070
ABCA1	70	intron 7 + 11327	ctaacaatcttatttccatt G/C agtccttataaagaagtg	1071
ABCA1	71	intron 7 + 11738	ctgacgttttaaggagacgc C/T gtaggctcccttgaggactg	1072
ABCA1	72	intron 7 + 12295	agctgttaaatattgttct T/A tttttctttagcttatgct	1073
ABCA1	73	intron 8 + 387	tagcaaggccaatcatttta C/G caacacacatgcttgctaac	1074
ABCA1	74	intron 8 + 697	ggaactgtcgtgtgtccccc A/T gcataaggaagctgagccagg	1075
ABCA1	75	intron 8 + 1312	attgctctgcagatccccc G/A cagccctctgtccctgttct	1076
ABCA1	76	intron 8 + 3036	ctttatgtgggaagaatttt T/G tttttttagtgaggagtg	1077
ABCA1	77	intron 8 + 3176	aaatggcctgggttctctgtc C/A cctttctgtctgtatgcctc	1078
ABCA1	78	intron 8 + 3364	ggcagaaggcaaaagcttagg A/T cctagagagtgctggaccac	1079
ABCA1	79	intron 8 + 3373	caaaagcttaggacctagaga G/A tgcctggaccacgcactcac	1080
ABCA1	80	intron 8 + 3561	cagggtatttattaatgattt C/A ttggaagtgttggaaata	1081
ABCA1	81	intron 8 + 3654	agtcgggaatacatttgca T/C gtaagacagaacgctgcctg	1082
ABCA1	82	intron 8 + 4715	ggcagaggggtctcagaatc C/T gcaattccaacaatgtctcc	1083
ABCA1	83	exon 9 + 936	cgtattgtctcgggacatcc C/T gagggaagggggctgaagat	1084
ABCA1	84	intron 9 + 2309	cccctcaagagtcagtttaa A/G ttttggtcatgttattgtc	1085
ABCA1	85	intron 9 + 2392	atgggagggttctgtgcttca T/C gaaaacattttccagatca	1086
ABCA1	86	intron 10 + 228	tggggagtgaggagactggc A/G cagggtgctgtgatgggt	1087
ABCA1	87	intron 10 + 319	ttctgctgctccctggctccc C/T acctgactccaggtgaacaa	1088
ABCA1	88	intron 11 + 377	gaagaaggtgtgggagcaaa A/C gcattgattttacatgtagac	1089
ABCA1	89	intron 11 + 521	agtgctctagagacaattgg G/A ttcaaatgtggagcaggctg	1090
ABCA1	90	intron 11 + 2850	ctctatacaatcattatgct G/C ccattgaaataataaataca	1091
ABCA1	91	intron 11 + 2976	ctccaattcgttagaacagg A/G gcttcatcttctctgtcgaa	1092
ABCA1	92	intron 11 + 3056	gtttgcagctgctgtttttc C/T ggacagacatctgtcaggc	1093
ABCA1	93	intron 12 + 340	ggcattattttgaaactta T/C ctaaaatcgaattcgggtcc	1094
ABCA1	94	intron 12 + 381	aatataatttttgaatttt A/G tattaaaaattatattagta	1095
ABCA1	95	intron 14 + 1728	caggctcagaggccttggcc C/T atcacccctggctcacgtgtg	1096
ABCA1	96	exon 15 + 2040	atgggctctggacacacgat C/A ctctggttttagctgttcat	1097
ABCA1	97	intron 15 + 1382	cttttagacagaaaagttag G/A tgggatattatctcccacag	1098
ABCA1	98	intron 15 + 1453	tatataaggagaaaccagtt G/A aaattacattatgaagaac	1099
ABCA1	99	intron 15 + 1567	ttctgcgtgattttgggtaa G/A tcacttatcttctttaggat	1100
ABCA1	100	intron 15 + 1617	cagtttgctcatcagaaga T/A gaacagcattacgctctgc	1101
ABCA1	101	intron 16 + 95	agttgagacagaaagatgat T/A gtcttttccaatgggacatg	1102
ABCA1	102	intron 16 + 452	tgggtttttgcttgagtaat G/A ttttctgaactaagcacaa	1103
ABCA1	103	intron 16 + 657	ctgttgctcagctctgggt T/C cataggcatcagcagcccca	1104
ABCA1	104	exon 17 + 2473	gcttcaatctcaccacttcg G/A tctcatgatgctgttttg	1105
ABCA1	105	exon 18 + 2649	ggttccaaaccagaagagaat A/G tcagaagtaagtgcgttg	1106
ABCA1	106	intron 18 + 1730	tgaaagttcaagcgcagatgc C/G ctgtgtccttacactcact	1107
ABCA1	107	intron 19 + 426	aggaccttacagtgggtagt A/G tcaggaagggttcagggtctg	1108
ABCA1	108	intron 19 + 468	aaagcaccagcgttagccctc A/G gtggcttcagcagcattcc	1109
ABCA1	109	intron 20 + 876	ccctcctcatcaaaagttaa C/T acatggggtcctatgtcagg	1110
ABCA1	110	intron 22 + 118	catgggatactcttctgtta T/G cacagaagagataaaggga	1111
ABCA1	111	intron 22 + 560	aaagctttgccattctaggg G/A tcatagccatacagggtaa	1112
ABCA1	112	intron 23 + 102	acccttttgccatgttgaa A/G ccaccatctccctgctctgt	1113
ABCA1	113	intron 23 + 287	gtcaaaagaaaagagactgt C/T aagaggttaagagccttggct	1114
ABCA1	114	intron 23 + 1063	acccttcaccctcaggaagc G/A aggtgttcacacggcacac	1115
ABCA1	115	intron 25 + 321	ctctttacttaagtacagt T/G gaggacacagggcatcagga	1116
ABCA1	116	intron 25 + 376	gttagaaattcagcaacttg G/C gccagctcagacctaactga	1117
ABCA1	117	intron 25 + 478	catatcataggaaatgacaaa C/T gtttatggatggatagtcta	1118
ABCA1	118	intron 25 + 579	tcattttaattctcaaaaaa G/T atgaaaaaatgaacactcag	1119
ABCA1	119	intron 27 + 153	aatggtaaaagccactgttt C/T tttgcagcatcgtgcattg	1120
ABCA1	120	intron 28 + 1058	actatcatgggagataatga C/T tatggtttgcatgattgga	1121
ABCA1	121	intron 28 + 1317	caggaccagctgttctgagt C/T accctgaattgtgacactat	1122
ABCA1	122	intron 30 + 372	tatatgatttttaggttttt T/C ttatcagcttcttctgctttt	1123
ABCA1	123	intron 30 + 506	cccttttaaaagtaagcagt A/G gataaataaattcagtgaa	1124
ABCA1	124	intron 30 + 1033	ctggatttcagtggtccctt G/C attttccacatgaagttgt	1125
ABCA1	125	exon 31 + 4281	ttctccctttgagagacac G/A ccttgccaggcaggggagga	1126
ABCA1	126	intron 33 + 626	ggctcctgttactgatttc C/T gtcttttctctctgctttt	1127
ABCA1	127	intron 33 + 719	taatagccctcatgctagaa G/A ggagccggagcctgtgata	1128



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA1	128	intron 33 + 726	cctcatgctagaagggagcc G/A gagcctgtgtataaaggccag	1129
ABCA1	129	intron 33 + 889	ctttcctcaatgtctcagct A/G tctaactgtgtgtataatca	1130
ABCA1	130	intron 33 + 1097	ctgtgcacccactgtctgg G/C ttttaattgcaggctgttct	1131
ABCA1	131	exon 35 + 4760	tatgacaggactggacacca G/A aaataatgtcaaggtaaac	1132
ABCA1	132	intron 35 + 234	aacctatctaaacctcagtt T/C cctcatctgtgaaatggaga	1133
ABCA1	133	intron 37 + 411	aactctgtacattttatcag C/T agcttatccatccattgcaa	1134
ABCA1	134	intron 37 + 1224	caggcatagggtatttcagag A/G tgaagggtcaagtcocctgaa	1135
ABCA1	135	intron 37 + 1720	aaattaaaattactctgact G/T ggaatccatcgttcagtaag	1136
ABCA1	136	intron 40 + 251	tgaaggtaaggaaaatagtg T/G tatttgcttgatccactgg	1137
ABCA1	137	intron 40 + 252	gaaggtaaggaaaatagtg T/C atttgcttgatccactggc	1138
ABCA1	138	intron40 + 319	agcactggaaaagtcaaac A/G taactttgagaattaggtga	1139
ABCA1	139	intron 40 + 957	cttgttactcttttttctt G/C tcatgggtgatagccatttg	1140
ABCA1	140	intron 41 + 146	tgatgtgggcatcccgagc C/T cctccctcccccactctgga	1141
ABCA1	141	intron 42 + 239	cattgttttatatgcttac A/C ttatgtgttagttattaaa	1142
ABCA1	142	intron 42 + 321	aataaattggttattttgag T/A ttgagtttcatagtccaaaa	1143
ABCA1	143	intron 42 + 322	ataaattggttattttgag T/C tggatttcatagtccaaaa	1144
ABCA1	144	intron 42 + 533	agatgaaaaattatgtagat G/A ataagtgaatgatacggttct	1145
ABCA1	145	intron 42 + 546	tgtatgatataatgaatgat A/G cgggttcaaaaagacagttt	1146
ABCA1	146	intron 43 + 739	tacagccacacttaaaatgg T/A cccattatgaatacatatt	1147
ABCA1	147	intron 44 + 18	taggtgagaaaagaagtggc T/C tgtattttgctgcaaaagact	1148
ABCA1	148	intron 44 + 264	acaataataatttgcgtttt T/C ttaagagtataattatgta	1149
ABCA1	149	intron 44 + 279	tgttttttaagagtataaatt T/C agtgatttttggttaattga	1150
ABCA1	150	intron 44 + 508	tttaccattgctacataaaat C/T cccctatgtacatgtacct	1151
ABCA1	151	intron 44 + 1477	gatctcctctcctgtctctt A/T catttttgcagtagcaatgt	1152
ABCA1	152	intron 44 + 1665	tgtttgtaagaactgatttg G/A ttgttatagctatgagggcc	1153
ABCA1	153	intron 44 + 1956	gtgtgtgcacactcaaaat T/G tctggccctctcatttgggt	1154
ABCA1	154	intron 45 + 68	aataataccttattggcttt T/C ccacacgcattgacttcagg	1155
ABCA1	155	intron 46 + 608	ttatactgacttcaatagag G/C ttacagacaaaagtgtttt	1156
ABCA1	156	intron 47 + 336	ttcacattgtaaacaccac T/C acactgaacagcatcatccc	1157
ABCA1	157	intron 49 + 55	agggtgtggattcctgcctcc G/C acactcccccattaggctcc	1158
ABCA1	158	3' UTR (exon 50) +7949	acaacaaaatgtgggtgtctc C/T aggcacgggaaacttggttc	1159
ABCA1	159	3' UTR (exon 50) +8226	aggagcccaactgtaacaata C/T tgggcagcctttttttttt	1160
ABCA1	160	3' UTR (exon 50) +8682	aaacttcttccacttttttcca G/A aatttgaaattattaacgctaa	1161
ABCA1	161	3' UTR (exon 50) +8697	ttccagaatttgaattataa C/T gctaaagggtgaagacttca	1162
ABCA1	162	3' UTR (exon 50) +9097	aactattttgaagaaaacac A/G acattttaatacagattgaa	1163
ABCA1	163	5' flanking - (1033-1032)	tgaacttaaatatttagacat (AT) ggtgtgtaggcctgcatcc	1164
ABCA1	163	5' flanking - (1033-1032)	tgaacttaaatatttagacat ggtgtgtaggcctgcatcc	1165
ABCA1	164	intron 5 + 6368	ttctgatgggtgtgtgtgt C/Δ tgaagaatcatgactgggtgg	1166
ABCA1	165	intron 5 + 9709	cattttctgtctgaaccccc T/Δ caccattcaggcagctgct	1167
ABCA1	166	intron 5 + 13816	tcctactttctctctttttt T/Δ catttgctctctccaccac	1168
ABCA1	167	intron 10 + (270-271)	cttttcaggaggaggacaaa (G) cgctcattgtctgtgtctt	1169
ABCA1	167	intron 10 + (270-271)	cttttcaggaggaggacaaa cgctcattgtctgtgtctt	1170
ABCA1	168	intron 20 + (611-612)	tttagcccatcctctcccc (C) gccacccctcttattagggc	1171
ABCA1	168	intron 20 + (611-612)	tttagcccatcctctcccc gccacccctcttattagggc	1172
ABCA1	169	intron 32 + (391-392)	gagtgcccttgggtactctct (T) gatgggggactccatgataa	1173
ABCA1	169	intron 32 + (391-392)	gagtgcccttgggtactctct gatgggggactccatgataa	1174
ABCA1	170	intron 37 + 847	gctgtatatatttgaaatgtcc C/Δ gttttcaaaagcaagccaa	1175
COMT	1	5' flanking - 1287	cgatgatatttccccattct G/A agtccagaataacctagaaat	1176
COMT	2	5' flanking - 1287	tgtgagtatgggaaggggaa G/A ctttttctgtctgtgtctccc	1177
COMT	3	5' flanking - 503	caggggctccaggagagacaa G/A tgtgtatccctccattgtct	1178
COMT	4	5' flanking - 425	gagaagttgggaagtctggc C/T agtggggccggtgctggtg	1179
COMT	5	5' flanking - 277	cccagcccaagtttccccc C/T tgggaagggggcactgtgtg	1180
COMT	6	intron1 + 12058	ctggcccatgggaagggagg G/A agggggcccccagcggggcca	1181
COMT	7	intron1 + 12070	agggagggggggggggccccc A/G cggggccacagtaaaagggt	1182
COMT	8	intron1 + 18831	tgtgtatgttcttggtaaac C/T agcccttggcttcaacatc	1183
COMT	9	intron2 + 832	ctctctctttggccaccgt G/C actacccccaaactccggccc	1184
COMT	10	intron3 + 90	ggagaagctgttatcaccac A/G ttccaggggggctgggaacc	1185
COMT	11	intron3 + 425	ccccaaagttggcaggttccg T/G gattcagagagggcagctct	1186
COMT	12	intron3 + 671	ggctcctgtcttttgggaaa G/A gtggggggccgtgcoctggg	1187
COMT	13	intron3 + 676	ctgctcttttgggagagtg G/T gggccgtgcoctgggagcca	1188
COMT	14	intron5 + 75	tcagcctcagcctctccaaa G/C agccaggcattccagtagag	1189
COMT	15	intron5 + 310	accagacaccaggggcagaaa C/T ggcacagggaccaaggagatg	1190
COMT	16	intron5 + 346	agatgggttggggaagggccc G/A ctctggggccagcctgctct	1191
COMT	17	intron5 + 3023	aaggcagccgcctgctcaa G/A gcctaggcattgtcctcct	1192
HNMT	1	5' flanking - 211	cagaggcagatgacagttct C/T cgttaaagatttcaactgtg	1193
HNMT	2	intron1 + 5409	aatataactgatataattgg A/G acatttcatgttggcctagt	1194
HNMT	3	intron2 + 2561	cacttgtgcttggacaagaa A/G agaaggcctacaagaaaaag	1195
HNMT	4	intron2 + 2895	caatcagaatgtgaagaaa A/C ctccaagaaaaatttaagtt	1196
HNMT	5	intron2 + 3977	accaaacttggaaagtgaaa G/A ttatgcattgtatgttcatt	1197
HNMT	6	intron2 + 5296	ttacatagttagtttggag T/C cccaggattttattttcctt	1198
HNMT	7	intron2 + 13317	caaccctcatgaattcttag C/T tgggattgggtccctataaca	1199
HNMT	8	intron2 + 14682	gtatgtagcaaatgagttc A/Δ ggaagagatttaaatcccta	1200
HNMT	9	intron2 + 15406	gtctatgattcatgcatcc G/A tctaaccagctgtctacct	1201
HNMT	10	intron2 + 28943	atgtgacttaaaactcaggt A/G tatcaatctcccttgatgt	1202
HNMT	11	intron4 + 49	cagaagaagaacttttcaga A/G tatatatataatgaatatct	1203
HNMT	12	intron4 + (1942-1943)	tttgagaaaaatttaaggta (A) tcttctatggcccacttcca	1204
HNMT	12	intron4 + (1942-1943)	tttgagaaaaatttaaggta tcttctatggcccacttcca	1205
HNMT	13	intron4 + 2405	ccctgtgaccaagcagataa C/A ctcatgctttatttagtcca	1206
HNMT	14	intron5 + (80-81)	cctgtgtttgaagaagctt (TT) atatatatttgccttcatt	1207
HNMT	14	intron5 + (80-81)	cctgtgtttgaagaagctt atatatatttgccttcatt	1208
HNMT	15	intron5 + 235	ctttcttttgggaaaatag T/C ctttgccttctatatatgaa	1209
HNMT	16	intron5 + (702-703)	tacttacaggtttagttttag (AT) acacagcagactctgtcttc	1210
HNMT	16	intron5 + (702-703)	tacttacaggtttagttttag acacagcagactctgtcttc	1211
HNMT	17	intron5 + 749	ttacaccagcccccatactt T/G aacaccatattgcacaaat	1212
HNMT	18	intron5 + 1101	gtaggcagcctattcttgat T/G atattcatcaatcatacaga	1213
HNMT	19	intron5 + 1137	acagaaaaagtattgtagac G/A gaataaacaattcattgaga	1214
HNMT	20	intron5 + 1348	aaggggagcatgaatagcca C/G aagtaactgagaactgatta	1215

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
HNMT	21	intron5 + 1673	caaaagaaggaggtaaga C/G tcaacaatcagtttagctttt	1216
HNMT	22	intron5 + 2022	attttatttggggctttcta C/T gctctctctcctaagccta	1217
HNMT	23	intron5 + 2285	tgctactacttaactcttaaa G/C atccagagtaaatgatggag	1218
HNMT	24	intron5+4159	taccagttgaccocagcaacc C/T tcttatagagttagtttaaat	1219
HNMT	25	intron5 + 4501	aatgatccacaaaattacta C/G tcattgtttttctttcaatga	1220
HNMT	26	intron5 + 5251	caacacacacacacacaca C/G caaatggagagcagccagaca	1221
HNMT	27	intron5 + 5802	gaaaaagaaaatctggctta C/T atcatgttgaaaacaaaagt	1222
HNMT	28	intron5 + 6189	tccaattccacottctccta G/C agcatatcctgcagttacct	1223
HNMT	29	intron5 + 6297	gtcttggttcatctcttag I/A taaattagatctgggaactt	1224
HNMT	30	3' flanking + 458	taigtactctcaagaactc C/T tataagaccaagatcatct	1225
HNMT	31	3' flanking + 993	ctgaaatgaacactgaacc G/A ttaatactactgatatttac	1226
HNMT	32	3' flanking + 1793	gtggagcacagcattttagg G/A ctgtatattgtcttattata	1227
GAMT	3	intron5 + 1411	ggtagcttgggtccatcccc G/A accaggagacgaggtgccc	1228
PNMT	2	intron1 + 35	ctggggcacgaggagacaaga G/T gtcgtcggggagtgaagca	1229
CYP1A1	1	intron1+1590	ccactcttcaaaaggagta C/T atgtgacagcagctggaaat	1230
CYP1A1	2	exon2+160	gaatccacagggccatggg G/A ctggcctctgattgggcaca	1231
CYP1A2	1	5' flanking-731	gcctgggctagggtgtaggg I/G cctgagttccgggctttgct	1232
CYP1A2	2	intron1+371	cttccctgtgttcacactaa C/T cttttcctcttttgaaattg	1233
CYP1A2	3	intron3+44	atagccagagagaagccttga G/A acccaggtgtttgttcagt	1234
CYP1A2	4	intron5+81	tccttgcctaggaaactgtta T/C ataagaaaggagggaact	1235
CYP1A2	5	exon6+181	ctggccatcctgtcacagca A/T ctggagttcagcgtccgcc	1236
CYP1A2	6	exon6+295	cggctgcgctttctccatcaa C/T tgaagaagacaccaccattc	1237
CYP1B1	1	5' flanking-3669	tgatcctgtgaagcatcac G/A gttatcctctctgcacatg	1238
CYP1B1	2	5' flanking-3149	tgacagcacttaccacacta G/C ttctctgatttttgagta	1239
CYP1B1	3	5' flanking-1222	gggggaagccacccccgcc G/A agcgccctccggcttcccta	1240
CYP1B1	4	5' flanking-376	ttccgggaagcaagctcaag I/C cccggagagggagggaggt	1241
CYP1B1	5	5' flanking-265	ctggggacacccgtgcggcct C/T gattggaggtgctgtgatg	1242
CYP1B1	6	intron1+129	tgcccgagcgtttatcccca G/A attgcaggaaccgttacgcg	1243
CYP1B1	7	intron1+379	tgagtgacacgcttctctct C/T tctgtcccccagcattggcac	1244
CYP1B1	8	exon3+ (799-800)	agccttctgggagattttttt (T) gaggtaaaagacttaaaagggc	1245
CYP1B1	8	exon3+ (799-800)	agccttctgggagattttttt gaggtaaaagacttaaaagggc	1246
CYP1B1	9	exon3+1284	agtatagtgagggttccatga G/T ttatcatgaattttaaagta	1247
CYP1B1	10	3' flanking+2226	tttctttttctttttttttt I/A aaaatttattcctattttcct	1248
CYP1B1	11	3' flanking+ (2226-2227)	ttctttttctttttttttt (T) aaaatttattcctattttcct	1249
CYP1B1	11	3' flanking+ (2226-2227)	ttctttttctttttttttt aaaatttattcctattttcct	1250
CYP1B1	12	3' flanking+2230	ttttcttttttttttttaaa A/A ttatttctatttcttaccata	1251
PEMT	90	intron1 + (297-299)	attgtgtgagactcagaggt TGT/A ccgtgttagtctttgggatt	1252
PEMT	91	intron1 + 817	tcataagcctgttaaggcac A/G tctctgccccaaagcagtttc	1253
PEMT	92	intron1 + 830	aaggcacactctctgccccaa G/A cagcttctaataccagttctt	1254
PEMT	93	intron1 + 1035	gagttctctgaaggagctaa T/C accagttagtttttgaaga	1255
PEMT	94	intron1 + 1573	agtggcagggagagactaac C/T ggggtgtgaggggtgggct	1256
PEMT	95	intron1 + 1759	gatttttcttaagaaagaa A/G gaaagaaacatacaacatac	1257
PEMT	96	intron1 + 2768	gcactttgtcttccacagcc C/A ggggcacccctcaggattcag	1258
PEMT	97	intron1 + 2785	ggccggggcaccctccagat I/C cagaagatgactccagtagg	1259
PEMT	98	intron2 + 4598	ccgtgggttttttttttttt I/A ctctatttcttttgggtctg	1260
NAT2	21	exon2 + 288	atgttagggaggtattttta C/T atccctccagtttaacaaata	1261
NAT 2	22	5' flank - 2053	ctggattgcaacatttttaaa T/C ccagggtgcagggtttccaac	1262
NAT 2	23	5' flank - 1299	gaatcaccagtgccggaggt A/G taacagtgaaaccaagacac	1263
NAT 2	24	5' flank - 1145	ctgtagaacacagagattat C/T ggaggcagtttgatcatgcc	1264
NAT 2	25	5' flank - 1036	ccttccacacagagtcocag I/A tcatgtggcagcagtcacaga	1265
NAT 2	26	5' flank - 94	aaagattgtctaagagattc G/A cagaggcaacctgagccct	1266
NAT2	27	5' flank - 643	atgtttatattttatattaa I/C attaatgtaataaaaaattt	1267
AADA	1	5' UTR + 29	attaaagtacactattcagg C/T atataatgtaggtttacttt	1268
AADA	2	intron1+138	gctgtggcctttgacaattg G/A ttacttagaagattgtttg	1269
AADA	3	intron1+142	tggcctttgacaattgttta C/T ttgaaattgtttgttttt	1270
AADA	4	intron1+1033	ttccagcagagacaccaaca A/G gtaaaacaccccgactaca	1271
AADA	5	intron1 + 1253	ttttttccctcatatttttc I/C gctgtgtctacaatagtga	1272
AADA	6	intron1+1366	ctctgttagccttttaatta A/G ttaattcatttacttaacta	1273
AADA	7	intron1+1369	tggtagccttttaatttaatt A/C attcattcatttacttactat	1274
AADA	8	intron1+2501	ggttacagaaagaattgttg G/A ttggccaaaaaatgatatgg	1275
AADA	9	intron2+1971	aaatgagagtttaagtaggag A/C attttcttttattttgtgc	1276
AADA	10	intron2+1988	gagaattttctttttttttt A/G tgcaggagaaataataacaa	1277
AADA	11	intron2+2341	agggtccctttctattgtcc C/T atgcagacttaggtgatcct	1278
AADA	12	intron2+2546	gtctgacacagaaggatcaa I/A ggcaaaatgtgcaagacaaa	1279
AADA	13	intron2+2609	taggaggttcactgggaaac I/C tgaattccactgagtcatga	1280
AADA	14	intron2+2663	tataaatcagttgttaattt I/C gctctcgtatttttaaggta	1281
AADA	15	intron4 + 605	tgtgtcagtaaaatattata T/C taagttaggtgaatgagatca	1282
AADA	16	intron4 + 621	tatatataagtaggtgaatga G/T atcatgttaattgtgagacta	1283
AADA	17	intron4 + 679	ttagagattcagacgaattc A/G tataatcttcagtggtgtat	1284
AADA	18	intron4+1680	gttaaaatgtggataaaatc C/T acaatttgcaaaatatttgg	1285
AADA	19	intron4+1748	atttagaagttctatatactc T/C tttagatattatatacaact	1286
AADA	20	intron4+1771	tatagtataattacacacttc G/A aaaaacacaaaattattttt	1287
AADA	21	exon5 + 238	caagtcatctcttcaaattt A/G ttaattggagttccctgctc	1288
AADA	22	3' UTR + 121	ttagaatttggcttttctta A/G aatggctagtttaagttcca	1289
NTE	1	5' flanking - 535	cacgatctgtctctcagttc C/T tgttaactctagactttctg	1290
NTE	2	5' flanking - 15	gtaaatccccggcaaaaacc A/G gcagcgccttgcaagccccc	1291
NTE	3	5' flanking - 748	agcatggcgcggggaggggg G/T gtagggaggttgggggggac	1292
NTE	4	5' flanking - 690	tgaataatttaaggggccc I/C gcttcggagccggggcgaa	1293
NTE	5	intron6 + 605	tcttgcataatacttagtg A/G ggggtctacatcaggggttt	1294
NTE	6	intron6 + 748	agcctcagcctctctcttc C/T gggggttatctcaggcatct	1295
NTE	7	intron6 + 987	gtgctgctctctgggattcc C/T gtgcgtcatgtagtctacct	1296
NTE	8	intron6 + 1882	tggcctcaagcaatctctcc G/A cctcggcctcccaaatgtct	1297
NTE	9	intron6 + 2222	gaatgtttatgtagaacaga G/A agactgtatctgcggtcttc	1298
NTE	10	intron12 + 166	tatctggtaccgaggaagct C/G tggcctcgtccccagggcc	1299
NTE	11	intron13 + 69	atccaggtccaccgctctcc C/T gctttgattgttttaactctg	1300
NTE	12	intron14 + 8	agcccccgtctgggtaaggg C/T tgggacccgtcccggtgggtg	1301
NTE	13	intron16 - 113	gccaccgcgccctgcgcctt T/C atatttttcttaacaccttc	1302

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
NTE	14	intron21 + 34	agagccggccggccagagc A/G tgcctggagatgtatccgg	1303
NTE	15	intron21 + 128	gaagaatcgtgccctgag G/A gtttcaaacctaagtagga	1304
NTE	16	intron21 + 151	ttcaaaccttaagtaggacc C/G aggtgcagagcattctgggg	1305
NTE	17	intron21 + 651	ccactgtactccagccggga C/T gacagagctagaacctgtt	1306
NTE	18	intron21 + 737	tggaaaatagtctgtgatt G/T ttgttaggactctgggac	1307
NTE	19	intron21 + 1752	acagctggctaggctgtta G/C tggagaacctgggaagcaac	1308
NTE	20	intron21 + 1788	gaagcaacagctgggtcaaa A/Δ gtactttttctttcttggc	1309
NTE	21	intron21 + 1907	cactgcacacctctgctccc A/G ggttcaagtgattctctgc	1310
NTE	22	intron21 + 2065	ctgctctgttttatgttcag G/T tccccattagacagaggaa	1311
NTE	23	intron21 + 2336	agtctgggagcacaggga G/A gaatttcagataaggaggaa	1312
NTE	24	intron23 + 41	tgggggggggtgggtggg G/C ctggagcctcaaatctttc	1313
NTE	25	intron23 + 71	caaatctttcagacctgag T/C tcaagttctcggttccaac	1314
NTE	26	intron23 + 81	cagacctgagttcaagttct C/T ggttccaaccacggagcct	1315
NTE	27	intron24 + 150	gtggggcggtgtgtgacctc A/C gcgtctcgattatccgcagct	1316
NTE	28	intron29 + 37	gcctgcagcaaccgctgacg T/C cactgggggtgggggatg	1317
NTE	29	intron29 + 370	cctccaggctcagcgagccc G/A tggggccgctggggcctccg	1318
NTE	30	intron30 + 56	acctccgcaccacacacac G/A cacacgcgtgggacacaca	1319
NTE	31	intron30 + 358	aaaaatcacaaaaataacc A/G ggtctgtgggtgtgctgt	1320
NTE	32	intron30 + 372	tttaaccaggctgtgggtg T/C gcctgtaatccagctactc	1321
NTE	33	intron30 + 430	aaatcacttgaaacctggag G/T tggagggttcagtgagctga	1322
NTE	34	intron30 + 655	gtgtgcacaccagctatata T/C gcaaatgctttctctcaggg	1323
NTE	35	intron30 + 659	gcacaccagctatataatga A/C atgtttctctcagggcgag	1324
NTE	36	intron30 + 760	tgaataggccatttgccaa C/T gcatgccagctgttccggt	1325
NTE	37	intron30 + 835	gcacacagctagataggatg T/C ggcacctctgaccggttaa	1326
NTE	38	intron31 + 40	tgttgcctgcatagggtgctc T/C ggttaagctttgctacttaa	1327
NTE	39	intron31 + 41	ggttgcctgcatagggtgctc G/A gctaagctttgctacttaa	1328
NTE	40	intron31 + 1329	gtctgtcaaggcgagggagac G/A gcatgtgtgagcagtgctg	1329
NTE	41	intron35 + 31	aattgcttctctgtcttttc G/A gactggggaccacctctg	1330
DDOST	8	intron2 + 1299	atcttctgtagtgggttct C/T ggtcagtaactggtgtttg	1331
DDOST	9	intron2 + 1581	gatactgttgggggggaaaa T/C gacagagagtgtaaacagt	1332
DDOST	10	intron2 + 2822	gtttctcaacagggtgcttc T/G tgcagtttcagactggataa	1333
DDOST	11	intron2 + 3392	cagaaggcgtggaggcctgc C/T gcgctctctctgttgcgc	1334
DDOST	12	intron5 + 495	attgttgaaccaggagggc G/A gagggtgcagtgcccaagg	1335
DDOST	13	intron6 + 226	ggaaactgctgggtcaccag C/T tctgtttgttccagtatcc	1336
DDOST	14	intron8 + 303	aagagaataggatcattagg A/T tgaatttggtaggcaaggga	1337
DDOST	15	3' flanking + 40	cacagcgtggagacggggca G/A gaggggggttattaggatt	1338
MRP2	1	exon 1 + 77	catattatagaagagttctt C/T gttccagcagcagtcaggga	1339
MRP2	2	intron2+192	atcaaatggcttttgatttt T/G gcataagaatggtgactctt	1340
MRP2	3	intron 1 + 413	gataagttctagaactggca A/C ctaatgatagtgactagaag	1341
MRP2	4	intron2+3639	gtcatatcccacccccaat C/A gacccaataggtaacaatgaa	1342
MRP2	5	intron2+3989	agttatgaacccgatttttc C/T gggactggttcttctagctc	1343
MRP2	6	intron2+4078	aggtttccagatgtgttccc T/C aggcattctctgtgttagga	1344
MRP2	7	intron2+4171	cttattctttgtgtcagttgg C/T ttcttaccaccttttagctt	1345
MRP2	8	intron 2 + 5373	gttaaggatagtgaactca A/G aattttttatcacagtgcaa	1346
MRP2	9	intron2+4436	ggactagtggagaatttaga C/G ctcttccgaataaatagatc	1347
MRP2	10	intron 2 + 3930	aaaactggcaggagaaatttc A/G ctggagctgcagtcaggact	1348
MRP2	11	intron 2 + 4257	gggtattggaaagtctttgc G/C gctgctggaggctgcgggtg	1349
MRP2	12	intron 3 + 772	ggtataaggcgaagattttt A/T aaaaaatttaattgcttaatc	1350
MRP2	13	intron 7 + 1658	ggactcttaccagcttagtt G/T cctggttttctaacttaaaa	1351
MRP2	14	exon 10 + 40	tggccagggaaggagtagacc G/A ttggagaacacagtgaaacctg	1352
MRP2	15	intron 11 + 1672	aacttttttaagtcttaagac T/A ggaaggcctgtgtcctaggc	1353
MRP2	16	intron 12 + 148	ccctctcaccgccccatgcc A/G cttttctctctttagccat	1354
MRP2	17	intron 2 + 1020	agtgctgcgattacaagcct G/C agccaacctgcacagcctctg	1355
MRP2	18	intron 2 + 5227	taccataatttatgtgtctt A/G tatgacatgaatttcatttg	1356
MRP2	19	intron 2 + 5373	gttaaggatagtgaactca A/G aattttttatcacagtgcaa	1357
MRP2	20	intron 2 + 5538	ttaatgaggttaagcacatg G/T tcatatgttttaaaagccttt	1358
MRP2	21	intron 13 + 180	catgagttttctgagcccca C/G tttaactaactataaaatga	1359
MRP2	22	intron 13 + 1497	gtgcagggtccctcgtatgc T/C atagccagttcctctttaga	1360
MRP2	23	intron 15 + 169	atgagctgaaagcaaggtt T/C tcagcccttccctgataa	1361
MRP2	24	intron 15 + 949	ttccaggtgacacatttagt A/G cctaatttgggaatgttaa	1362
MRP2	25	intron 15 + 984	tgtaaatctagttcaatccc A/C tttagtaagaagaggaggtc	1363
MRP2	26	intron 16 + 4059	catcctgatgcacagttatt C/T aaatttaagctccatttgtt	1364
MRP2	27	intron 19 + 10899	atgtatggagtatttatgga G/A taagttattcctagctgtat	1365
MRP2	28	exon 22 + 51	caagcaataggattgttttc G/A atattcttcatcatccttgc	1366
MRP2	29	intron23+56	tatactaggatctttctga C/T agggaggaaattattatgtcc	1367
MRP2	30	intron 23 + 734	ttagccaactactgtactag G/A cactggggcactcaatgaat	1368
MRP2	31	intron 23 + 801	atgggcccagaccacactcac T/G gatttttttagtgtatctgag	1369
MRP2	32	intron 27 + 124	gggtccctaaagtttccctt C/G ctctaactcaaaaggacctaa	1370
MRP2	33	exon 28 + 52	cagattggcccagcaaggc A/C agatccagtttaacaactac	1371
MRP2	34	exon 28 + 84	aacaactaccaagtgcggtg C/T cgacctgagctggatctggt	1372
MRP2	35	exon 28 + 129	agaggatcactgtgtgact C/T ggtgcatggagaaggttagg	1373
MRP2	36	intron 29 + 154	ttccctaggatggacagtc A/G ttccagaaacttgaatgt	1374
MRP2	37	intron 30 + 91	gtgttaggtgatgcctggca T/C agaattttcatccaggtctg	1375
MRP2	38	intron 31 + 170	gcaaaaattttacatcacgc A/G aatgaacagcaaacggtta	1376
MRP2	39	intron 26 + 154	ctggctccatcttttaccga T/C ggaactattccttactcttc	1377
MRP2	40	3' -flanking + 739	gtgaattttttattataagct C/T gttctccttaaaactttatc	1378
MRP2	41	intron 3 + 1145	scatccttctccctcagtc C/T tgggttagtggcagttattct	1379
MRP2	42	intron23+432	tggcagtagagcagggtgag G/A aggtattttctgcagaggaa	1380
ABCB1	1	5' flanking-196	gctttggagccatagtcagt T/C actcaaaattttattatct	1381
ABCB1	2	5' flanking-16	tactctttacctgtgaagag T/C agaacaatgaagaattact	1382
ABCB1	3	intron1+71660	cttgctgggggaagggtgct A/C gaaaataacaaatccaag	1383
ABCB1	4	intron1+80091	gaataaatattcaagttctg A/C aataatatacatgacctatg	1384
ABCB1	5	intron1+103126	gatataaatacagaattcatc T/C gtgtctcaagaaaaggtcat	1385
ABCB1	6	intron1+103148	tgctcagaagaaaggtcatg C/T gataaattaaagttctgtag	1386
ABCB1	7	intron1+108428	aattaatttatcatcatctg A/G tcacattttcacacaactca	1387
ABCB1	8	intron1+112042	cataagttgaattgtcccca A/G tgattcagctgatgcgctt	1388
ABCB1	9	intron2+491	gctctctgcttcgacgggg G/Δ actagaggttagtctccact	1389

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCB1	10	intron4+36	attaactattcaaaatactt C/T ggaatttgacatctcctta	1390
ABCB1	11	intron5+1596	ttagctctcttactgcttca T/C agtggagaatcaaatctt	1391
ABCB1	12	intron8+1789	aaacactctgaatattaaac C/T gctcctggaaccacagctca	1392
ABCB1	13	intron14+24	agttgctcttgccctttgcc T/C ttctagaggtgcaaaaaata	1393
ABCB1	14	intron14+81	tgacgggaagttaggaaacta C/T tataaatcggagaagggaa	1394
ABCB1	15	intron15+38	caaaccacactgatttataa A/G cataagaacattctactact	1395
ABCB1	16	intron17+73	gtttgtgggtgctagggtac A/G gtaggagtggaacaagaga	1396
ABCB1	17	intron18+564	caacagtaaagttacaatct G/A aaaggaatgctctctgtta	1397
ABCB1	18	intron18+2062	tttccttgaggaaatggttat C/T cctgtgttcttgagttcca	1398
ABCB1	19	intron18+2293	ccacatcagggttttccccag A/G cacccttgggacagttgaaa	1399
ABCB1	20	intron20+557	aaaaccctaaccattgacac G/A tgtgaatgttttctgggga	1400
ABCB1	21	intron21+24	cgtgctccttttctactggt G/A ttgtcttaattggccattt	1401
ABCB1	22	intron21+2725	ctgacctgtttttggctgac A/G ggttttagttcctccctca	1402
ABCB1	23	intron21+4725	tcttgattataaaagatcca A/G agagataggaatagttaatt	1403
ABCB1	24	intron22+8507	tgcaactaggaaaaaaacaa T/C atggaaatgtgtaaaatata	1404
ABCB1	25	intron22+8537	tgtaaaatactatctttttt T/A aaaaaaaggacacatttat	1405
ABCB1	26	intron22+8565	aggacacatttatccagcat T/C atgacagactattacattt	1406
ABCB1	27	intron22+8952	caccttgggtttctaggttg G/A caaagtaactggcctgacca	1407
ABCB1	28	intron22+9520	caccaacaataatcttttc C/A cagttgggtggcatctggt	1408
ABCB1	29	intron22+9836	agactctgacttagacatga C/T ggcagggaagaagagactt	1409
ABCB1	30	intron24+377	taaaatacagatgtgttga C/A taagtctcgaagcctttgg	1410
ABCB1	31	intron24+1493	ggggagggtgtccaggcagca A/Δ catggagagctggacttgat	1411
ABCB1	32	intron24+1495	ggagggtgtccaggcagcaac A/T tggagagctggacttgatac	1412
ABCB1	33	intron25+342	tgacgccttgatcttctggg C/T tcaagcgatcctctgcctc	1413
ABCB1	34	intron26+134	cttggataaagctcgagagc C/G taatatgtgtctcgaagtg	1414
ABCB1	35	intron26+1272	gtccttcaattttgtgtga A/G cttaaaaaacaggactctaaa	1415
ABCB1	36	intron26+1394	tattaagtgtgtgtgttaag A/G ttgtgctataaagattgta	1416
ABCB1	37	intron26+ (1987-1988)	aagggtgtgaagagtgaaag (AAAG) gaggctattgtctccagac	1417
ABCB1	37	intron26+ (1987-1988)	aagggtgtgaagagtgaaag gaggctattgtctccagac	1418
ABCB1	38	intron27+59	gcagcctctcggcctatag G/T ttgatttataagggcgtgt	1419
ABCB1	39	intron27+80	ttgatttataagggcgtgt T/C tccagaagtgaagagaaat	1420
ABCB3	1	intron3+8	tctcctttggcaggtagtg G/A tgggcagctgggtccatttg	1421
ABCB3	2	intron4+104	cttcaccgtatgccaggac C/T tggggatgcttttctctgt	1422
ABCB3	3	intron10+219	gcagcagtggtgtcctccc A/G tgggcagcccgctcaggtcc	1423
ABCB3	4	intron11+ (317-319)	atgggtgccaggtggatgtg GTG/Δ tccatctattctctgtttt	1424
ABCB3	5	exon12+19	agctgcagagctggaattcc T/C gtggggatcgacagtgctg	1425
ABCB3	6	exon12+ (356-357)	aggtgggtgggtgggtgggt GG/TGGTGGGGTGA ggtg	1426
ABCB7	1	intron1+220	acggggcaggaggttctggg C/A agaggacacctggagcgtg	1427
ABCB7	2	intron1+480	agttaaactccttgctgaca G/A gctgctcttgataggcca	1428
ABCB7	3	intron1+ (512-513)	gataggccaaaacaccttaact A/Δ ctctccaaaacatagaccgc	1429
ABCB7	4	intron1+1690	agttctccaaataaggccagat A/G aagttaaagataaatttgta	1430
ABCB7	5	intron1+5309	aattaataatcattttattgct G/A tattgtgttcagttgtatct	1431
ABCB7	6	intron1+11274	tgctctttttcaagccagcc A/G gctttaaaaaaaagttagct	1432
ABCB7	7	intron1+11085	caggttttcagggtcctatgt G/A gacctgaagaaaaatgagag	1433
ABCB7	8	intron1+10037	atttctattttctcaacttct T/C ttattacattatctcatcat	1434
ABCB7	9	intron1+21	ccaactctgaacttccccc C/A ctttttttctgttcagcag	1435
ABCB7	10	intron3+ (135-136)	ttctctaatgaaaaaaaaaa (A) catattaattgaccatagtt	1436
ABCB7	10	intron3+ (135-136)	ttctctaatgaaaaaaaaaa catattaattgaccatagtt	1437
ABCB7	11	intron3+333	aaaaacaattgtgtgtgtgc G/A tgtgcttcaaggttaattgt	1438
ABCB7	12	intron12+524	taaccactctgcctcagta C/T gaacacagtgccgaaccca	1439
ABCB7	13	intron13+1543	atcctgtgagggtgggaagc G/A tatggctagcataaataaa	1440
ABCB7	14	intron13+2400	tgttaacttactgctcatt C/G ctattcttccacctgctat	1441
ABCB7	15	intron15+2201	ctccttcttaaccttagcaa G/C agtctggagatttacttatc	1442
ABCB8	1	5' flanking-2272	ggcttaggcctaagggtcga T/C gttggggcagtagccctga	1443
ABCB8	2	5' flanking-2070	agctatgaacaaagaccct G/A tcttctagaggtagcaaaa	1444
ABCB8	3	intron1+25	aaacggaaaaacctaactcag A/C gcggggcattgacgcgccgg	1445
ABCB8	4	exon2+308	tgctgtctctggggtagcc G/A tctgtgtgaggctttcccca	1446
ABCB8	5	intron2+334	cccccaacttaaacatttgt C/G cccctgtctccccattcca	1447
ABCB8	6	intron4+12	cctgctccggtactgcccagc C/T gcagggtgcagagttgggt	1448
ABCB8	7	intron5+547	agttcatagcatttctcctc G/A gcccctcagggcctgctgt	1449
ABCB8	8	exon7+57	ggcaatgtgcggactgtgag A/T gcttccgcatggagcaacg	1450
ABCB8	9	intron9+1231	ttccgcagctgcattgaca C/T cctgcgtgccccgtttctg	1451
ABCB8	10	intron9+2164	ccctttggaggtcccttctag C/T gctgcttatgtggagattct	1452
ABCB8	11	intron9+2645	ttctgctcgtgtgctctccc C/Δ ggcgtcctttagcaagtgt	1453
ABCB8	12	intron9+2646	tctgctcgtgtgctctccc G/A gctgcttttagcaagtgtg	1454
ABCB8	13	intron9+3229	caggggcggagcagggtacc G/A tgggtcagctgggtccctt	1455
ABCB8	14	intron12+ (113-114)	ttctccaactgccacaagggg (GG) ccttctttctgggacaatc	1456
ABCB8	14	intron12+ (113-114)	ttctccaactgccacaagggg ccttctttctgggacaatc	1457
ABCB8	15	intron13+128	tgctctcggggagaccctggc C/T gcttccacatgtcctcagct	1458
ABCB8	16	intron13+305	atccaggtctagagaagcct A/G tagtggaggtgctgagctgc	1459
ABCB8	17	intron14+135	acagttgtgtcagggaagac C/G agaaccacagccaagggga	1460
ABCB8	18	intron14+159	accacagccaaaaggggacag A/T gtcgttgtgtgggacaggg	1461
ABCB8	19	intron15+747	gttggagccttgggctctgt A/G agggggacaggggaatcat	1462
ABCB8	20	3' flanking+333	cctatccccctggctcaccoc G/A ggaaccacagctcccatctt	1463
ABCB8	21	3' flanking+1168	ccctctttcagggtgtgtat G/A cagtgattgatggagcagc	1464
ABCB8	22	3' flanking+ (1719-1721)	tagaccgcaggagcccgccc GTC/Δ ttcttaacctgcctcggcc	1465
ABCB9	1	intron1+ 69	aggggtgccaggccaggcagc G/C gttggggggcgtctggcac	1466
ABCB9	2	intron1+8873	tgggcccgacagtgggggc T/C ggaactacctcaaaagcttc	1467
ABCB9	3	intron1+8940	accagctcagcctgcccagc G/A tgcacacggcaccagctgg	1468
ABCB9	4	intron1+11410	agatccaagggatccagagg T/C tggaaatgacccctcgtgc	1469
ABCB9	5	intron1+12863	gggaagccagatgccacaaa G/A gctctgtgacttccattcca	1470
ABCB9	6	intron1+19731	gccaagtgtcaagatcgagc G/A aggggagggcctgacaggg	1471
ABCB9	7	intron1+29649	cagaatccagatgcccgtaa T/C gttgttaagagcctgcaca	1472
ABCB9	8	intron1+31793	ggccagcgggggaggggtac C/T ggccagacccgtgggcaaaa	1473
ABCB9	9	intron1+37537	agagtcacaggggttgggtg C/A ccccgggaggtggcatcta	1474
ABCB9	10	intron1+38293	taccagccctgtgcttccag G/A gaccatgtgacctgtcaact	1475

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABC89	11	intron1+44661	cccgaggtgcctgcttcac A/G gcaggattgccctcctgcag	1476
ABC89	12	intron1+49576	aaagtggcccggtgctgt C/T cctgaagccctaaagcacc	1477
ABC89	13	intron1+64669	ccacagacaagccgggtagc C/A caccctgcagctcaacacac	1478
ABC89	14	exon2+448	cctggttttggccctgttc G/A tgggacgtacattcactc	1479
ABC89	15	intron7+3364	gttaccaggagtcgggtatc A/G gtggacaggaaacgctgtc	1480
ABC89	16	intron11+113	gggcccaggagctctccca G/T actatcagcctctgggctg	1481
ABC89	17	exon12+370	cccaggcctgcagcactgaa A/G gacgacctgcatgtcccat	1482
ABC810	1	5' flanking-424	tcgcgtctgcgcctccccc C/T ggtctgcggcgtgagaaag	1483
ABC810	2	exon1+491	acaagggcggttgccccc G/T cagcgccggactccggag	1484
ABC810	3	intron1+37	ccactccctccgcggggcc T/G ctccttccacacgcgggg	1485
ABC810	4	intron1+217	actcgtttgcagattttaca C/T ttgttttctgttgacacac	1486
ABC810	5	intron1+405	gcgtttatacttttttttt I/Δ aaccaaaaaacattatttg	1487
ABC810	6	exon3+185	agggccggggccaggcttc C/T gtagcatcagtatgatgt	1488
ABC810	7	intron6+1269	caaatccacaactgtgcctt C/G cacagaatgggttgaaac	1489
ABC810	8	intron9+632	cccactccacttgggtgag G/A gcagtgagtggtgatgggt	1490
ABC810	9	intron10+2373	tacctcaggcactcagaca G/C cctcacaactcagaggctca	1491
ABC810	10	intron11+108	tccttttctgtttttttgt I/Δ ttttttttttctgggtgg	1492
ABC810	11	intron11+2379	cattggttttttagttatc I/A gtgtttgtcatcatcatca	1493
ABC811	1	5' flanking- (2596-2595)	tggtgtttagagctttctt (T) gagacatttttgtaaggt	1494
ABC811	1	5' flanking- (2596-2595)	tggtgtttagagctttctt gagacatttttgtaaggt	1495
ABC811	2	5' flanking-1746	agctgaagtgaattagcac G/A atcaactcagtaactacact	1496
ABC811	3	5' flanking- (326-314)	aggggggaagtttaaggt (T) 9-12 gtctgttatgttttaagt	1497
ABC811	4	5' flanking-135	agagggtttcccaagcacac I/C ctgtgtttgggtttattgct	1498
ABC811	5	intron1+511	aaatagatgcaaaaaaa A/Δ tgaactgttgatgatgtt	1499
ABC811	6	intron1+581	aatttcagtttttaggtcac C/T caagccagtgaggatcacat	1500
ABC811	7	intron1+ (1938-1951)	aaagacgttttaagggctt (A) 10-13 gaagaaagaaactgtag	1501
ABC811	8	intron1+4517	ggtttcccaacatctatct G/A ataaaaaaataatttgcca	1502
ABC811	9	intron1+5651	aaagagaataggttagtga I/C tagtatctctgtcottaatg	1503
ABC811	10	intron1+ (12200-12201)	aagagatggtcttagcccc C/Δ gtttgatttggggcacttac	1504
ABC811	11	intron1+13023	gtttggctactttgattaaa G/A aagaagaagagataataat	1505
ABC811	12	intron2+739	cctgcactctattctgacct C/T actggggaacagtatgtg	1506
ABC811	13	intron2+ (921-922)	tattttgtagttcaaaaagt (CAGATCTTTCAGCT AATTIAGAAATGT) tgcgtccatttgatattca	1507
ABC811	13	intron2+ (921-922)	tattttgtagttcaaaaagt tgctg tccatttgatattca	1508
ABC811	14	intron3+644	agccacacgtttcttattgc G/A tgggaagtttaaaaaatggg	1509
ABC811	15	intron3+2231	agtgaacctgagattgagct A/G tactgaactcttagaagag	1510
ABC811	16	intron3+2406	aaagggtgcttttaaatcc I/C tatgtttttctcatcaggtt	1511
ABC811	17	exon4+10	tttctcatcaggtttacaaga I/C gagaagaaggtgatggct	1512
ABC811	18	intron4+434	acaatttatagttatttctca A/G tgccccacacagtttatcta	1513
ABC811	19	intron4+518	gtagatgagtagctaaaaac G/T aaagtacgtcctgaaataa	1514
ABC811	20	exon5+120	ggcacaatgacagatgttt I/C attgactacagcttgagtt	1515
ABC811	21	intron5+320	gggaagtgaccatgaatt I/C acttgagtatcatctccaag	1516
ABC811	22	intron5+16076	agaagaggtaacagtaagcc I/G cctgatttacgacacatc	1517
ABC811	23	intron6+303	atttgaggtgtgtttgttag G/C gggcagtgagtagcttgaa	1518
ABC811	24	intron7+1141	aaaggttcagcagcgatga A/G gaagaaagagctttgcaaga	1519
ABC811	25	intron8+2463	ccattggctaataagcaatga A/C ctatgacatggtctaactta	1520
ABC811	26	intron8+2677	tcaatgatgttacagtga A/C tctaattgttataaaacc	1521
ABC811	27	intron8+2699	ctaattgttataaaacc A/I gccacatgttaaatgaatct	1522
ABC811	28	exon9+24	gtgtccaagttacgggacta I/C gagctgaaggcctatgccaa	1523
ABC811	29	intron9+108	caacttggctgtggcctcc A/G gaggaagtactgttcaaga	1524
ABC811	30	intron10+2475	taatcattccaaccacagga C/A ttatttcttaagaacatg	1525
ABC811	31	intron10+2478	tcattccaaccacaggaact I/A atttcatttaagaacatgata	1526
ABC811	32	intron10+2711	tttacagattggaagacca C/T tgaagtattgcaggtccaga	1527
ABC811	33	intron10+3539	agtactgttaattagttatca C/G ttgtgcacagagaaaaaatg	1528
ABC811	34	intron10+3623	tcagaaggtgtttctttca I/C gaccttctgagtttcagaa	1529
ABC811	35	intron10+3661	gaattcattataaaaaata A/T cacataatggagcgtgacat	1530
ABC811	36	intron10+5100	gggccaactctttgcttggc A/G atagactgtggccaatgaaa	1531
ABC811	37	intron10+5292	gctatttggtagaacatct G/A ggcatgacaggtagccttc	1532
ABC811	38	intron10+5912	gagtaattatcagtaaaaaa A/Δ taagtgttattttaatca	1533
ABC811	39	intron12+116	gtttccagtaataagggaat G/A gaggtgtctttctgaaag	1534
ABC811	40	intron12+326	gataaatgacaaggcaatta G/C aacaatcagggaagcacaggt	1535
ABC811	41	intron12+335	caaggcaattacacacatca A/G gaagcacaggttcttcccaa	1536
ABC811	42	intron12+2572	ccctaccttgcacatgttt C/T cttttactgtttttgttg	1537
ABC811	43	exon13+23	tctaaatgacctcaacatgg I/C cattaacacggggaaatga	1538
ABC811	44	intron13+70	atggcagtatattgatcaaa C/T agaaaggtgtgacatactt	1539
ABC811	45	intron13+ (1578-1579)	ttattggcctctattttttc (C) tgcccattgttcaagtatga	1540
ABC811	45	intron13+ (1578-1579)	ttattggcctctattttttc tgcccattgttcaagtatga	1541
ABC811	46	intron14+32	catacttccctgggagaaac C/T aagaggtcatagaagggaaa	1542
ABC811	47	intron14+80	cacaattatcacattttctt C/T tctgtatgttcccaagtcac	1543
ABC811	48	intron14+439	tattgtgtcaaaaacaaatc A/G ttgtatattccattctaa	1544
ABC811	49	intron14+ (1262-1263)	cagcctttgcattatatttt (T) gctgtgtgtctaacaggag	1545
ABC811	49	intron14+ (1262-1263)	cagcctttgcattatatttt gctgtgtgtctaacaggag	1546
ABC811	50	intron14+1283	gctgtgtgtctaacaggag A/C aaagagacaggtttgctc	1547
ABC811	51	intron14+1339	tgagatagatatttaggacc G/A tgaccaatttttatttgggt	1548
ABC811	52	intron14+1359	tgaccaatttttatttggg I/C tgaataattttatttgaagt	1549
ABC811	53	intron14+1480	tattgattagacaataaacc G/A tctgggggaaggatatttct	1550
ABC811	54	intron15+370	ccctttctaatgtctgcaca G/A cctatttaagaattatccca	1551
ABC811	55	intron16+ (550-559)	aaagttagtatttctatca (T) 9-12 gctactctgagggacttct	1552
ABC811	56	intron17+188	tttctctcccaattctgg I/G tttttgttagcttctcatc	1553
ABC811	57	intron17+194	tcccaattctatgggttttt I/G gttagcttctcatcttctgt	1554
ABC811	58	intron17+ (197-198)	caattcatgggtttttgtt (T) agcttctcatcttcttgggg	1555
ABC811	58	intron17+ (197-198)	caattcatgggtttttgtt agcttctcatcttcttgggg	1556
ABC811	59	intron17+ (289-296)	ttgaaaggggaactctttt (A) 7G (A) 4 tctgtgttttagtttctct	1557
ABC811	59	intron17+ (289-296)	ttgaaaggggaactctttt (A) 12 tctgtgttttagtttctct	1558
ABC811	59	intron17+ (289-296)	ttgaaaggggaactctttt (A) 10 tctgtgttttagtttctct	1559
ABC811	60	intron17+1070	tcagacttgggttttctcat C/T tttcttcttgagacaagtt	1560



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCB11	61	intron17+1651	tgtaaaatctctcattgta T/C atgctgacggatctttcttg	1561
ABCB11	62	intron17+2226	ccttaagtctctctctatca T/A gcacctgttctcaccagct	1562
ABCB11	63	intron17+2979	ctctctctctctctctcagc T/A ctactattcactgttgct	1563
ABCB11	64	intron17+3288	aatcccatatctcactcta T/G ccatctcatcgaatctt	1564
ABCB11	65	intron17+3289	atcccatatctcactctag C/T catctcatcgaatcttg	1565
ABCB11	66	intron18+97	aatatgagttttctaggtat A/G tatctagcaggttttcaagt	1566
ABCB11	67	intron18+98	atatgagttttctaggtata T/C atctagcaggttttcaagtc	1567
ABCB11	68	intron18+892	ctctgaaagttagtgatata C/T ctattttgttttgaatcaa	1568
ABCB11	69	intron18+2681	atgtatgagatcaagtcagg A/G tcaaatattagacacccata	1569
ABCB11	70	intron18+3780	ggaccatccgtgtggggcaat C/G gtccagagaaatgctggat	1570
ABCB11	71	intron18+5741	ctcaccggtataataacaac C/T gtacgaaaggtttttctttt	1571
ABCB11	72	intron18+ (5882-5883)	tgcgtattccctcagttcag (C) tttttattcaagccacagca	1572
ABCB11	72	intron18+ (5882-5883)	tgcgtattccctcagttcag tttttattcaagccacagca	1573
ABCB11	73	intron19+10022	tggctaagttaaaaaaa A/A gagattcaactataattgct	1574
ABCB11	74	intron21+322	caagattcaatactgcccc C/A aggggtgggtgaacagggc	1575
ABCB11	75	intron22+257	ctgttcaatttctctcgcga T/C agtgattctccacattcc	1576
ABCB11	76	intron22+552	taattaatacttctgtcttg G/G ggggttaagtggggatgta	1577
ABCB11	77	intron22+569	ttgggggttaagtgggat G/A gtacataaacacttctcaa	1578
ABCB11	78	3' flanking+243	aaacaccacagatgacata G/A aactaaagcggcagggaatc	1579
CYP4B1	1	5' flanking-333	gaacattcacagtgctgtg A/T tgaagaagacagtggttatta	1580
CYP4B1	2	5' flanking-18	gagcagctgaagcaggtcca G/T atgaaggttaggtgctgga	1581
CYP4B1	3	intron1+341	tccaaaacctctggatagta C/T atagaagtggaatccatt	1582
CYP4B1	4	intron1+542	cctatgggtggtcaggagc C/T gtacaccttcccaggttca	1583
CYP4B1	5	intron1+2856	gaggactttgcacatagtag G/A tgcicagctatattgtggc	1584
CYP4B1	6	intron1+6086	tttggaaatcaagagctggg G/T cagatgctagttgtgtgac	1585
CYP4B1	7	intron1+6598	ttttgggtgtgggggggg G/A cccatagtgaggagacagct	1586
CYP4B1	8	intron1+6660	acctaaagggtgtccatctg A/G agggagagcagcttaggggg	1587
CYP4B1	9	intron1+7242	ccctggtctcccttaactca T/C gctggactgttcccttgggt	1588
CYP4B1	10	intron2+107	gcctgtgtactaagtctg G/G agctgaggttccaccctac	1589
CYP4B1	11	intron3+361	atgggtgtgtgtgtaggacca C/T ggcgtgtaccagaggtgct	1590
CYP4B1	12	intron4-492	aaaggttttcaactctaaaa C/A gtgtctcctcattttctgtc	1591
CYP4B1	13	intron4-315	ggattacttcatatataacc A/G tgcgggggggctcaccacct	1592
CYP4B1	14	intron4-157	ctaccaccctatctctgata T/C tccagcaggatggaggcag	1593
CYP4B1	15	exon5+22	acaagtgggaagagaaagct C/T ggggggttaagtcctttgac	1594
CYP4B1	16	intron5+125	cccaggagccttagcttgc G/A gggagacaggacctgctcat	1595
CYP4B1	17	intron5+ (287-289)	tgtctaaagcctctctctcct C/T accctctgcttagcaggagc	1596
CYP4B1	18	intron6+54	gcctgggttctctctctctg C/T cctctatgccccctccat	1597
CYP4B1	19	intron7+ (99-100)	agctcttaagcatttccccc (TC) ttctctagcaaatataacc	1598
CYP4B1	19	intron7+ (99-100)	agctcttaagcatttccccc ttctctagcaaatataacc	1599
CYP4B1	20	exon8+114	tctctgtttctctactgcat G/A gccctgtaccctgagcacc	1600
CYP4B1	21	exon8+139	tgtaccttgagcaccagcat C/T gttgtagagggaggtccgc	1601
CYP4B1	22	intron8+247	agaaagtgtcaacaagg G/T tgatattttgtgtgtaact	1602
CYP4B1	23	intron8+366	tgtgggggtgaacagagctg A/G gacagctgggagagccagtt	1603
CYP4B1	24	intron8+650	cccttgcctgtgtgcagaca C/A cctgcctttctctctggct	1604
CYP4B1	25	intron8+844	tcatatgtgagaatcccccc C/A ccacgggggtatccagacaca	1605
CYP4B1	26	intron8+1767	tccattccaagaatgttct G/T gttgtgtgtgctggcaggaat	1606
CYP4B1	27	exon9+53	tgtgcatcaaggagagcttc C/T gcctctaccacctgtgccc	1607
CYP4B1	28	intron9+652	agtcggatgtgtctatgaac G/T ctctgtcactggcagtgctc	1608
CYP4B1	29	intron9+774	ccttggtaccacacctgttt G/T tggccacagggaagcctgac	1609
CYP4B1	30	intron10+33	tgggctgggagatcagacag G/T tggggggactggagggtca	1610
CYP4B1	31	exon12+224	ccagatggctcaggctgtga C/A ctccctggggcaccacctcc	1611
CYP4B1	32	exon12+270	ctgggtgtggaggagttggg G/A cccctgctctcaggaggct	1612
CYP4B1	33	3' flanking+129	tctgtgtctcacagtcact G/A gtgctccaggcattcagggt	1613
CYP27A1	1	intron1+295	agggggagctgtcttggga A/G gagagtgccagggcaaatg	1614
CYP27A1	2	intron1+17503	cagtgcataaagcctctgat C/T ctcttagagaagaggagac	1615
CYP4F2	1	intron1+ (145-146)	ccaagcccttggaacctca CA/A gtgattcaggctggcccttt	1616
CYP4F2	2	intron1+193	tttaatcagctctctctct C/T ttcccatcttaagtgtta	1617
CYP4F2	3	intron1+324	ccctgctctacctccggcac T/C gccctgctctgctctccac	1618
CYP4F2	4	intron1+367	tccttgagggttccctggccc G/C ttctctgggctcaggctct	1619
CYP4F2	5	intron1+402	ggatctcaccgtccatccc G/C ctgcccctgaggatgtccca	1620
CYP4F2	6	exon2+35	gcctgtctctggctgggcctc T/G gggcagtgccagatccctc	1621
CYP4F2	7	exon2+166	cggtgtttcccaaaccccc A/G agacgggaactgttttgggg	1622
CYP4F2	8	intron2+125	ggcagagagcagaggagggc A/G tcttactactctctgctt	1623
CYP4F2	9	intron2+440	gggcccgtctccacttccc T/C acaccgaaggcaccctttct	1624
CYP4F2	10	exon3+48	gttctgactcagctgtgtggc C/T acctaccgccagggtttta	1625
CYP4F2	11	intron3+701	agactccacccagcttggg T/A cctttccttgaccctgtg	1626
CYP4F2	12	intron3+742	cttccatcgtttggacgggc G/A aggcctgagcaggggaatgg	1627
CYP4F2	13	intron3+1020	gcttagctttctccatgct G/A cttttcctatcaagggtggcc	1628
CYP4F2	14	intron3+1039	cgtttttctatcaagggtg C/A cttttcctatgatgtcaac	1629
CYP4F2	15	intron3+1040	gcttttctatcaagggtggc C/G ttttctctatgatgtcaacg	1630
CYP4F2	16	intron3+1920	ccacctgtctaacctctgtt G/C ctgtttgtctatgtctgggg	1631
CYP4F2	17	intron3+1945	ttgctcatgtctggggctg T/A ctctacaatggctgttatat	1632
CYP4F2	18	intron3+2621	agcattctgtagaatgctga G/A ctgtgctcagggttgcgga	1633
CYP4F2	19	intron3+2665	tgttgatcgttagggggc A/G tgcagagcatgctggaacc	1634
CYP4F2	20	intron6+194	gggtttgaactgtgtgggtgt G/T gtcagagctctgtaggggac	1635
CYP4F2	21	intron7+67	ttgaaatgtcagatgaag G/A atttgaactgtatgaagg	1636
CYP4F2	22	intron7+2811	tccaagggaattgocatt T/G aattctcctgtactcaggt	1637
CYP4F2	23	intron7+ (3096-3097)	ggggtgggggttggggggg (G) ttactgccttctctccagga	1638
CYP4F2	23	intron7+ (3096-3097)	ggggtgggggttggggggg ttactgccttctctccagga	1639
CYP4F2	24	intron8+145	gggtctgtctaccttgggt G/A ctgaagcagccagagacc	1640
CYP4F2	25	exon9+44	ctctctctgggtctctgtacca C/T ctggcaagcaccagaata	1641
CYP4F2	26	exon11+48	gaaccatcacaccagct G/A tgtggcgggaacctgaggtg	1642
CYP4F2	27	intron12+108	tgttccaagtccagctctc C/T ttccctacacctctgtggg	1643
CYP4F2	28	intron12+285	ccatgggagtcaggcaccg A/T taaccccttctctatttctc	1644
CYP4F2	29	exon13+238	aagtgaagcctagaattacc C/A taagacctgttccacagtc	1645
CYP4F2	30	exon13+342	tgtcgtgaattgttcattgc G/A gccattaccagtagccaa	1646
CYP4F2	31	exon13+563	tagtgtactgtccttttata T/C gaaatttccagaacaggcca	1647

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
CYP4F2	32	exon13+707	aaatgttccggacacatagata G/C tgacgaaggtagcacgacac	1648
CYP4F3	1	intron2+258	cattaatgcacotctgcggg G/T ctcttggcgagggttggg	1649
CYP4F3	2	intron2+916	ttaggacatgtcctgagtc C/T acactgtccccacaaacct	1650
CYP4F3	3	intron2+3417	atccaggtctcacacagtgct C/T acttctctcttggctttag	1651
CYP4F3	4	intron2+4090	gagagcatgaattgggtct G/A tgtctttctctccagattca	1652
CYP4F3	5	intron3+89	tgtctgcctccagcgggtc G/A cgtgccatgtgcagacagg	1653
CYP4F3	6	intron3+243	tcaagctctgtgtacggcta C/T gtctgttgcacctgtatatt	1654
CYP4F3	7	intron3+502	aggctctggaccacgggtcc G/C taagtgaactgtctgagaca	1655
CYP4F3	8	intron3+755	ttttgtggccatgtcaggac A/T tgtgaacacatgtcagtgct	1656
CYP4F3	9	intron3+855	gggacagacagggtgtccta G/A gtcccttgaaggcattctg	1657
CYP4F3	10	intron3+970	cctgacatagctcctacgtg C/T catgttaggcagtgctattg	1658
CYP4F3	11	intron6+122	gaggagttgttatacctgat C/T gttgaaggactggtatgaat	1659
CYP4F3	12	exon7+159	ggtgcacgacttccacagatg C/A cgtcatccaggagcggcgcc	1660
CYP4F3	13	intron7+2107	caggttgccagtgattttt T/A ctcaagaagtgttccatcaag	1661
CYP4F3	14	intron7+2255	gaccaagaagggtctaggag T/A gcaagatgggttgggttc	1662
CYP4F3	15	intron8+132	cctcaatgcaagggttctgt A/C caccctcgggtgtgtaagca	1663
CYP4F3	16	exon9+59	taccaccttgcaaggcacc C/A gaataccaggagcgtgtcg	1664
CYP4F3	17	intron9+13	attgaatggtgagtgacagt G/A ctgtgtccctgttctgagc	1665
CYP4F3	18	intron9+36	ggtgcccctgttctgagct G/C tctcattggctctgttcccc	1666
CYP4F3	19	intron9+167	accatcctgactgtctggg C/G aaaggttataggccctagg	1667
CYP4F3	20	intron9+369	tccttaattcctacccctcc G/A tccagtcacagggattataa	1668
CYP4F3	21	intron9+458	tcattccatccatccagtgct T/C gttcagcaaatctctcata	1669
CYP4F3	22	intron10+46	ctcctgggttaggaaggagg A/C ccctcaggcaggagcattg	1670
CYP4F3	23	intron10+63	gggcccctcaggcaggggag C/A ttgtcctgactgcccccttc	1671
CYP4F3	24	intron11+14	ccctgagggtggggcccccc C/G tctctgtttttgtccattcc	1672
CYP4F3	25	intron11+84	gatcaggagaatccaacatc G/A cctccctccaagacacacac	1673
CYP4F3	26	intron11+113	caagacacacaccactgtct T/C tccaaggctggcgactggg	1674
CYP4F3	27	intron11+164	cggcaacccttcttggctc T/G cctccaggtctatgacccct	1675
CYP4F3	28	intron11+165	ggcaacccttcttggctc T/C ctcagggtctatgacccctt	1676
CYP4F3	29	intron12+156	gaaaaggccacagagtagg G/A ttgggttggctctagaagg	1677
CYP4F3	30	intron12+253	gagctcggctaggctcgag G/T atatgcaagccacatgggg	1678
CYP4F3	31	intron12+346	tgggtgtccaggccaggtt A/C ccggttctgagggccagg	1679
CYP4F8	1	5' flanking-61	accatgtttaccatcattg G/T tcttggagctcccagcccc	1680
CYP4F8	2	exon1+67	gtggcagcatcccggtgct G/T ctctgtctgtgtgtcgggg	1681
CYP4F8	3	intron1+707	tacgcagcaggtattcacca T/G tatttccacattatccactg	1682
CYP4F8	4	intron1+857	acaccccttaccctcacatc G/A tgacacagctgggccaaga	1683
CYP4F8	5	intron1+907	tgccatctccacccctccccc G/A tgcaggggcatctctttat	1684
CYP4F8	6	intron2+668	tgtggcacttccacatgat T/C tcaattgcccctgtgtccag	1685
CYP4F8	7	intron2+818	gccacagagaccatggctca G/A gcccacaaatgctgagtgac	1686
CYP4F8	8	intron2+1079	tatgcttgggtgttgagaa C/T atgttggaacctgtaggagc	1687
CYP4F8	9	intron2+1194	ccggtcccttttatgcccc C/A accctcttcttcttctcgc	1688
CYP4F8	10	intron5+45	aaacatgggatggagtggggg G/T gtgggtgtggggagagcaaa	1689
CYP4F8	11	exon8+ (19-20)	ggccatgacaccacggccag (GCCAG) tggcctctcctgggtctgt	1690
CYP4F8	11	exon8+ (19-20)	ggccatgacaccacggccag tggcctctcctgggtctgt	1691
CYP4F8	12	intron8+222	tttatttcccaactaactt G/G tatgcaagcttagtaaaatc	1692
CYP4F8	13	intron8+334	cttgagaaattacggcaaa A/T accgaatgacttttggacc	1693
CYP4F8	14	intron8+1999	tttaagtagtatttattctc T/C tgccttttagctatgatctag	1694
CYP4F8	15	intron8+4184	caggaggccgtgtgtatgct C/T ctggataaattgttgggttt	1695
CYP4F8	16	exon9+119	acgtgtgtctcccagacag C/T gagtcacccccaaagggtcc	1696
CYP4F8	17	intron11+282	gggttgggggttccgggct G/C gttcctggcgagtgaggcc	1697
CYP4F8	18	intron11+340	tgacgtcagaccttccacct C/T gggcccccagggaactgcacg	1698
CYP4F8	19	3' flanking+35	atcacctacacttgcaccaa T/C taacctttcagatttccggt	1699
CYP4F8	20	3' flanking+83	ctgtgttggccctgtgct G/C agtccgcggatggccagta	1700
CYP4F8	21	3' flanking+90	ggccctgtgctcagtgccc A/G cggatggccagtagggggcg	1701
ALDH1	1	intron1+564	cattatttctcagccaaagt T/C tgttgcattggagcagatg	1702
ALDH1	2	intron1+710	gttctgagagtaactctgaa C/T tttgctgtttcacactgct	1703
ALDH1	3	intron1-3868	ccctttttatccagaata C/G agcctaactcttctctctg	1704
ALDH1	4	intron2+2933	taagtatgctatactatatt T/C gatagataatactataata	1705
ALDH1	5	intron2-1646	caatgtgatttaactgaatg C/T gcaaatatgcactgtatag	1706
ALDH1	6	exon3+54	caggcttttcagattggatc C/T ccgtggcgtagctatggatgc	1707
ALDH1	7	intron3+157	taggccccttaacattgaac T/G attctcaaatagtaactctgc	1708
ALDH1	8	intron3+339	tgagtctcctagaatgat G/A ttagggttattcaagcattt	1709
ALDH1	9	intron3+655	agcagtttagatgagtcagag C/A ataataatgttggggagg	1710
ALDH1	10	intron3+735	gaagccaatttaacataaac C/A aataccaagatcaggtttca	1711
ALDH1	11	intron3+863	gcaagtatggttaatacaag G/A accatttattactcaaatat	1712
ALDH1	12	intron3+1757	agatgacaagatttcttcta T/A ttcaaaaatccctagcaca	1713
ALDH1	13	intron5+90	ttctctaaaacagatggatg C/A ttatgtatttgttaaatgtg	1714
ALDH1	14	intron6+213	cagggaagccaaacacaaagg T/C ttgtgttcaaacagtaacct	1715
ALDH1	15	intron6+1323	ttttgaattaaattcttata C/T tgtaacttttaaacctttta	1716
ALDH1	16	intron7+638	gcaaaagaagggttgggaag C/A atactgtaccatgcaaaaaa	1717
ALDH1	17	intron9+ (1462-1463)	aatggaattctatgtttttt (T) gttgtgattattttatctatc	1718
ALDH1	17	intron9+ (1462-1463)	aatggaattctatgtttttt gttgtgattattttatctatc	1719
ALDH1	18	intron9+1757	tgatctagaatttagtttct A/G taatgaatagaaatccagtg	1720
ALDH1	19	intron12-1383	aatccacttattactctcc T/G gagagctcaagtgccatata	1721
ALDH1	20	3' flanking+40	ttttaagtacaagttttgtt T/C acaggtatttcttctgtca	1722
ALDH2	1	intron3+1766	aaatttgggtgctcatctgc C/A tggccccccttctctctcctc	1723
ALDH2	2	intron8+52	gaaggttagccctggccacct G/C tgttgggtgtccagccgatc	1724
ALDH2	3	intron8+69	cctgtgttgggtccagccc G/A atcctgtcggcccccagtg	1725
ALDH2	4	intron9+5197	gctttcttatgaccttggct C/A atttccaggttgccttgg	1726
ALDH2	5	intron11+114	gagctgggctcagtttctcc T/C gggctagggtgtgatgtcga	1727
ALDH2	6	3' flanking+411	ggatgatgatttctgcccctc T/C tctgtgtgggttaaacagct	1728
ALDH2	7	3' flanking+ (432-433)	tctgtgtgggttaaacagct T/C tgttctatgcatttactttt	1729
ALDH2	8	3' flanking+488	ccaataagaatgtgcttga G/T gtttcatgatatttaattgt	1730
ALDH7	1	5' flanking-1455	ctgcctgtccacaccacag C/T agcttgcacatcatccccc	1731
ALDH7	2	intron1+464	catgaatgactctgggaag A/G atcattcttagcaatggaat	1732
ALDH7	3	intron1+2269	aaatggaatccaaacagca G/C agacctcccctcaccggtca	1733
ALDH7	4	intron2+1349	actgagcttctgccaccggc C/T gcttggcggccttcatgaga	1734

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ALDH7	5	intron2+1820	tccgtgtggaaggaaccc C/G cccagcctcagtgctagga	1735
ALDH7	6	intron2+2046	aacctcaggcgtgcctcag C/G caggagccagcctggcccc	1736
ALDH7	7	intron2+2939	aagcagcagcagcaatgga G/A tagtgagtgaaacgaatga	1737
ALDH7	8	intron3+7	tggcaagaacctgtgtgagc C/T gggcgggtgaggcgag	1738
ALDH7	9	intron4+36	gccccctccggtcacccctc T/C ccgctcaggcctcaggcc	1739
ALDH7	10	intron6+ (116-117)	atttcctctctctctctct CT/Δ gggcaggcctgggagcagtc	1740
ALDH7	11	intron6+263	cagacctcatacgtgaccc T/C gctgccccagcctcttag	1741
ALDH7	12	intron6+1298	gtagacagagctggactcca T/G ccttgggtgataaggatcc	1742
ALDH7	13	intron6+1411	gccagggtcacaagcagagg C/T gggaggagccaagggttg	1743
ALDH7	14	exon7+185	acctgcgtggccccgacta C/T gtctatgcagccctgagat	1744
ALDH7	15	exon7+339	tgcgggcattgctgggctgc G/A gctgtggccattggggccc	1745
ALDH7	16	intron7+249	ccagggtccagggtcagc G/A tgctaatgaaactccatc	1746
ALDH7	17	intron7+277	atgaactccatccaccac C/T ggtatctcgtgaaggctga	1747
ALDH7	18	intron7+498	gaccaagggtcggggattct C/T tgtgtccacaggccctgag	1748
ALDH7	19	intron8+14	cagccagggtggggctggcc C/T gggctggcagggtcaggag	1749
ALDH7	20	intron8+49	caggagcccgagtgaggcag C/T acaagtgtggcagcagggg	1750
ALDH7	21	intron8+111	tcaggactttggatgtgtg A/T cctcttggtctgtctctgc	1751
ALDH7	22	intron8+3219	atcctgatggggtcacaaggc A/G gcctcagccacatcctgttc	1752
ALDH7	23	exon9+33	gtctgacccagaccagcag C/T ggggcttctgtggaaaca	1753
ALDH7	24	intron9+946	tccaggccccagagctgac C/A ctcttggtggccgtggccc	1754
ALDH7	25	intron9+1067	aggctcccaagcctgggtc C/T ctcttgccccaccactct	1755
ALDH7	26	exon10+137	ccgaatgcgcgcgcgcgc G/A aggatgctgtgtggccat	1756
ALDH7	27	exon10+397	cgctcccaacctcagagccc G/A aggtggagggcatggaaac	1757
ALDH7	28	exon10+1198	ctcttccccatgctgctcat C/T ctcttgggccccatccactc	1758
ALDH7	29	exon10+1475	cagggttggaacctgaggttc G/A tctcctgtctctctggctga	1759
ALDH7	30	3' flanking+15	cttgcaatacttacctctc A/G gtgattgtcttctgtgcat	1760
ALDH7	31	3' flanking+60	caacaggactctggaccacag G/C ccttgccgttggtgaacaat	1761
ALDH8	1	intron1+98	agggaaggagatgtgtgcc G/A tggccgtgggtcagggggc	1762
ALDH8	2	intron1+157	atggctgcaggggccatggg T/C accgggtgtgctcaggagag	1763
ALDH8	3	intron1+354	ctgtggacagacaaggatt C/G ggtcgggggaccagggtc	1764
ALDH8	4	intron1+851	tatgacaggtccatcagccc T/G caacttctctgtgtcttat	1765
ALDH8	5	intron1+894	ctcagcatctgccccacag T/G gcttttgacacgttggttc	1766
ALDH8	6	intron1+463	aaagaacctccaggtccct C/G gtttagtccagaaggagg	1767
ALDH8	7	exon2+61	gccttcaactgaggccgac G/A cggccggccgagttccgggc	1768
ALDH8	8	intron2+8	ggacctgcataaggtggccc A/G tggagagtggccccggcag	1769
ALDH8	9	intron2+23	gggcccgtggagatggcccc G/C ggcaggggctggagcagct	1770
ALDH8	10	intron2+ (180-181)	ttcactcctgaacactcaca A/G gccacctgtgatgcaggct	1771
ALDH8	10	intron2+ (180-181)	ttcactcctgaacactcaca gccacctgtgatgcaggct	1772
ALDH8	11	exon3+72	gactacgctctcaagaacct T/G caggcctggatgaaggatga	1773
ALDH8	12	intron3+375	ctgcagcatcctaaacctac C/T gtccgactcaaggctgcc	1774
ALDH8	13	intron4+463	aatcacccccatggcacc G/A accgtactgagaggtgct	1775
ALDH8	14	exon9+33	atgtcggagcgggacagcag C/A ggcagctttggaggcaatga	1776
ALDH8	15	exon10+428	agggtgctcactcaacccca C/T cctcccaattccagccctt	1777
ALDH9	1	exon1+121	actgtgtggggtatggcg G/A tgggtggggaatgtgtgt	1778
ALDH9	2	intron1+67	cgcggatttcccgccagcc C/G ccgtttcctgtgtctgcag	1779
ALDH9	3	intron1+103	tgacgctgtgacttgacac A/G agacagtacagctgagagt	1780
ALDH9	4	intron1+1818	gaatttttgagaaaaaaaaa G/Δ ttgtctttagggttgcttt	1781
ALDH9	5	intron2+5891	tcaggaaacagggaagtaaga G/A gtttacatttctaatttct	1782
ALDH9	6	intron2+6398	atcaaaaacactgtgtgat T/G atcgtgctgtgaacctgct	1783
ALDH9	7	intron2+9677	atgacgctgagtttggtgc A/G tctttttgtttttcttgct	1784
ALDH9	8	intron2+9991	gggagaagtggaggacctac C/T cttggcttctaattcttcat	1785
ALDH9	9	intron2+10198	ttgtcagagacatctttgat A/G atccttactgtactatatcag	1786
ALDH9	10	intron2+10256	ttagtataaacttttttt T/Δ gtaaggatggagaaatag	1787
ALDH9	11	intron2+11382	catattcaattcttttatgt T/C ctttagaccaaaagaggca	1788
ALDH9	12	intron2+11455	taaacctttaagctcatcat C/T ggaccatctattgaattct	1789
ALDH9	13	intron2+12044	atttaaaagtgaagctattt C/T tagttttaaaattgagcag	1790
ALDH9	14	intron3+334	ctatttagcaacttttttt T/Δ gacagtgtataaagtttca	1791
ALDH9	15	intron3+368	gttttcaacaattgatattg G/Δ aaggttggtaggccctagga	1792
ALDH9	16	intron4+191	ccctcaaggagcttatagt T/A aggtgtacacaatcatgtc	1793
ALDH9	17	intron4+557	tagaaaaaatgtaatgtta A/G aaagcattactgttaggaca	1794
ALDH9	18	intron5+830	agttcaagatgatttttag G/C ttcagggcctagtgactta	1795
ALDH9	19	intron5+838	atgattttgtaggttcagg G/C ctagttagcttagcatgcaa	1796
ALDH9	20	intron6+120	agaaaagttgcacaatagt A/C caaagaattccatgtacct	1797
ALDH9	21	intron6+2569	atataaatctgctttaata T/C ttttttggggagaggacac	1798
ALDH9	22	intron8+1414	cgcatttcaaaaaattagc T/C ggggttggtgtgcacactg	1799
ALDH9	23	intron9+664	aaagtgcacatttttttt T/Δ ataacttcattggtcaagagc	1800
ALDH9	24	intron9+2170	taatgcacacatttttttt T/Δ cttcataggacatccaacg	1801
ALDH9	25	exon11+587	aaaacaaaaacaaaaaaa A/Δ cctgttcttttataggttc	1802
ALDH10	1	intron1+39	gggtgtggggaactggccc C/T cgcgcgcactgttgactg	1803
ALDH10	2	intron3+2491	tggcgaagaattggcac T/A gctgagttctacatgcagtt	1804
ALDH10	3	intron3+2595	ttctgtacatacaattgtga T/A ggttgaggccagttctggt	1805
ALDH10	4	intron3+2775	taccgctttgccccgaccca G/A ggttaaatcttcaataact	1806
ALDH10	5	intron3+3424	aggcacttctgcacacacc G/A cgtctcatgcaatttccctg	1807
ALDH10	6	intron3+3676	atgttgaagagattgctgat G/A tttagcgttaggatttattt	1808
ALDH10	7	intron4+481	tagaaaaataagaggttttcag G/T tctctctgtctaaatccgt	1809
ALDH10	8	intron4+769	atcctgctttatacctgaac G/A tcttgaggcagagccaaaa	1810
ALDH10	9	intron4+796	aggcagagccaaaagccaca A/G ccaggagagctgtgaccgaa	1811
ALDH10	10	intron5+254	attagttgtggcatatact T/G ttttaaaaaagtttaaat	1812
ALDH10	11	intron6+137	aatcctgctttctgtatatac T/C gtacctgtagctttgttat	1813
ALDH10	12	intron6+923	aggctaatgaatggtaagag G/A aaggggctatccgttagtag	1814
ALDH10	13	intron7+331	gtcttttctgatgttaattcc A/Δ cagggcattgctgaataaca	1815
ALDH10	14	intron8+643	tttagaacatgacctgcctg C/T ctctccacatgtgagatga	1816
ALDH10	15	intron8+666	ctccacatgtgagatgact G/A actcagctttttatttctcc	1817
ALDH10	16	intron9+2129	tgttttcattttttaaaaaa G/T gtttgactttggaattcatg	1818
ALDH10	17	exon10+ (1894-1895)	tggctgtgtactaataaca CA/Δ tctgcttcaaatgaacata	1819
ALDH10	18	3' flanking+31	gtattttgcaacttttttt T/Δ ctatttttaaaattcttagc	1820
ALDH10	19	3' flanking+106	gtgtgttgggtgtgtgt G/A gtactatagtaaataggtt	1821



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ALDH10	20	3' flanking+1630	aaaagcagctgggaacaca A/G ttaatcatgtcttaccgtat	1822
ABCC7	1	5' flanking-834	gtcaaacactccaaagcct T/G ccttaaaaatgcgcactggg	1823
ABCC7	2	5' flanking-729	cctccttgagattttttt T/A ccttttcagtagctgtccta	1824
ABCC7	3	exon1+125	tagcaggagcccccagcgccc G/C agagaccatgcagaggtcgc	1825
ABCC7	4	intron1+6200	ctatgtgagacgttaagaag G/A tagaggtggccaagaaggaa	1826
ABCC7	5	intron1+7538	agtctctttcttagcatgg C/A ctacagaggtgcaactacct	1827
ABCC7	6	intron1+13519	gaaccttaaatcttgagta C/A caaatgtgtctacatactg	1828
ABCC7	7	intron1+14110	attacacagatttttttt T/A aattttgggaaagtgcatt	1829
ABCC7	8	intron1+14293	gccaggcagattcctgact C/A tataaccagagcttatcag	1830
ABCC7	9	intron1+14316	taaccagagcttatcagag C/G atttatgtcccaagagaa	1831
ABCC7	10	intron1+14433	cagaatacaatgatggctc G/A gaaaaatagggattttctg	1832
ABCC7	11	intron1+14824	acgttttgacagttgcacaa A/T ttctttcttaagctttaa	1833
ABCC7	12	intron1+23401	aatatttttgaaaatcacta C/G ggtatcctgcatagtgatt	1834
ABCC7	13	intron3+879	gaaaaatttcagttcataca C/A cccatgaaaaatacattta	1835
ABCC7	14	intron3+922	acttatcttaacaaagatga G/C tacacttagggccagaatgt	1836
ABCC7	15	intron3+933	caaaagtaggtacacttagg C/T ccagaatgttctctaagct	1837
ABCC7	16	intron3+13704	ttttccaaataaaaaaa A/T ccagggtgatctgttaaatg	1838
ABCC7	17	intron3+13758	tattaaagaacatgatgctt G/A aaacagattaggaaacta	1839
ABCC7	18	intron4+240	ctctgtgtagtttttttt T/A ctctaatcatgttatcatt	1840
ABCC7	19	intron4+376	ttatgttcagcaagaagagt A/G taatatatgattgttaatga	1841
ABCC7	20	intron4+586	gtccagacaagagagcaaaa T/C tggcaggagcatcttaggt	1842
ABCC7	21	intron4+1089	tttcaatcgaacattttac A/T taagtgaagactttgttaga	1843
ABCC7	22	intron4+1615	aaagttaggtgtattgtat C/T tgtctccttttccaatgtt	1844
ABCC7	23	intron4+1946	aatacaacacaaacttgagct T/C tgcctatactttcaagaat	1845
ABCC7	24	intron6+783	tatcaagttttggagtcac A/G tagcactttgtttgaatccc	1846
ABCC7	25	intron6+ (1128-1131)	gattgattgattgattgatt GATT/Δ tacagagatcagagagctgg	1847
ABCC7	26	intron7+ (731-732)	gtagcaatgagaccattttt (T) cttcagttgagctccatgtt	1848
ABCC7	26	intron7+ (731-732)	gtagcaatgagaccattttt cttcagttgagctccatgtt	1849
ABCC7	27	intron7+1434	gaatgtttgtgttaacctg T/C ataactggcatgaaattgt	1850
ABCC7	28	intron8+752	catgctctcttcagtcacc A/G ttcttcattatatacacta	1851
ABCC7	29	intron8+1109	tatggccaagacttcagat G/A cgtggacttaattcttctt	1852
ABCC7	30	intron8+1312	atgaagacattcattttttt T/A ctcgtccaatgttgattga	1853
ABCC7	31	intron9+ (6521-6522)	gtgtgtgtgtgtgtgtgt (GT) ttttttaacaggagatttggg	1854
ABCC7	31	intron9+ (6521-6522)	gtgtgtgtgtgtgtgtgt ttttttaacaggagatttggg	1855
ABCC7	32	intron10+2119	gaacactttatgttttttt T/G ggacaaaagatctagctaaa	1856
ABCC7	33	intron11+3867	ttttttctcaagaaataga A/Δ gaggggagaaattgttttaa	1857
ABCC7	34	intron11+11844	tgaatcaaaatcatctaaaa A/Δ gctttcagaaccagacttt	1858
ABCC7	35	intron11+12144	atattaaacagagttacata T/C acttaacaactcatacatat	1859
ABCC7	36	intron11+20975	gtgtgtagatgaatgccag G/A gtaaatcacatagcatctaa	1860
ABCC7	37	intron11+27057	atggaagagaaagtttttagta G/A agggagaggaaggagagtg	1861
ABCC7	38	intron11+27131	gagagagactttttttttt T/A aaggcgagagtttactacct	1862
ABCC7	39	intron13+152	gtattaaactcaaatctgac C/A gccctactggggcaggattc	1863
ABCC7	40	intron13+287	tttgagtagatcattgctgt T/C gatataattactttaatta	1864
ABCC7	41	intron15+ (85-86)	atacatatataatgcacac AT/Δ aaatatgtatatatacacat	1865
ABCC7	42	intron15+106	taaatatgtatatatacac A/T gtatacatgtataagtagtc	1866
ABCC7	43	intron15+3341	ggaagtataaattgttaaat A/C actgagaccacaaacttaca	1867
ABCC7	44	intron15+5556	tgctattgactaatagtaat A/T attttagggcagctttatga	1868
ABCC7	45	intron15+5919	tgtgtgtctatgtggaac C/A gtgaggaaataattttatat	1869
ABCC7	46	intron17+2479	caaaaaggtagtggaagtcag A/C ggagaaggagaccctatgt	1870
ABCC7	47	intron18-81	aagtagcaaaaaaa A/Δ gaaataaatcactgacacac	1871
ABCC7	48	intron19+751	catttaaaaaatacaaatc A/G tatctattcaaaagtgcca	1872
ABCC7	49	intron19+820	tgacatttgtatagattta T/C tctaatttagctttttcag	1873
ABCC7	50	intron21+1532	ttacctttaactttttttt T/A agttttagatcagctctcttta	1874
ABCC7	51	intron21+1607	atgcttttggattgggtct C/T ataaatgtatagaatgttt	1875
ABCC7	52	intron21+11260	atgtggacaacatcagacta T/C atgcttttactttctctat	1876
ABCC7	53	intron22+ (130-131)	agaatcaattataaacacac AT/Δ gttttattatagggatcat	1877
ABCC7	54	intron23+1828	ctgtcctaaggttttaaaaag A/Δ aaaaaaaagggaaggaa	1878
ABCC7	55	intron24+ (7100-7112)	cccttcaaaactcttagaca (T) 12-14 agtttaacatgtttcaaaac	1879
ABCC7	56	intron25+237	actcttccccctgtcaaca C/T atgatgaagcttttaaatc	1880
ABCC7	57	exon27+115	gggtgaagctctttccccc C/T ggaactcaagcaagtgcaag	1881
ABCC7	58	exon27+334	ggatgaattaaagttttttt T/A aaaaagaacatttggttaa	1882
ABCC8	1	5' flanking-1099	aaaggggctgaagggtctt T/C cttttgtgttccccgactg	1883
ABCC8	2	5' flanking- (424-422)	caccccccaccacacacac CAC/Δ aaggtaacgtttctgccac	1884
ABCC8	3	intron1+1212	agcctgggcaacatagttag A/G cccccccgcctttctaca	1885
ABCC8	4	intron2+1003	aggaggactgtgaatccag C/A ctgcatgtttgggtcagatt	1886
ABCC8	5	intron2+1253	catctcaactaaggaagatc C/T agtaaccagcaagagtaga	1887
ABCC8	6	intron2+1382	cccagactgcactcctgcag T/C gctgctgtgctcctgtagtt	1888
ABCC8	7	intron2+2371	tttcagagctgtctggaaat T/A tagggggcagggtggagggg	1889
ABCC8	8	intron3+1957	ccctaccctagccccggg C/T ccccatagagtagaattgg	1890
ABCC8	9	intron3+ (2088-2089)	agagaacccttcattaaacca (CCA) gggcgtggctgaccagtgc	1891
ABCC8	9	intron3+ (2088-2089)	agagaacccttcattaaacca gggcgtggctgaccagtgc	1892
ABCC8	10	intron3+2204	taagcacaaagttataccac G/A tggatggattttgtcctttt	1893
ABCC8	11	intron3+2286	ttatctccccttgaaaggac A/G ctccacagagccagaaattc	1894
ABCC8	12	intron3+2312	cagagccagaatttctagaa C/G agggaaaaatggagggagg	1895
ABCC8	13	intron3+2356	ctgtgaactgcaggagacaga A/G ggaatagggtattggagaa	1896
ABCC8	14	intron3+2359	tgaactgcaggagacagaag A/C aatgggtattgggagaatgg	1897
ABCC8	15	intron3+2370	gcagaaaggaaatgggtatt G/A ggagaatggccagccctcca	1898
ABCC8	16	intron3+2382	tgggtattgggagaatggcc A/G gccctccaaggggctgatgt	1899
ABCC8	17	intron3+4910	ggggacagccttcagctgtg G/A aattctccagctcctagaga	1900
ABCC8	18	intron3+4969	cattattccagctcctgaggg C/A tggagcagaaggccgatgc	1901
ABCC8	19	intron3+5003	ccgatctcttgcctccat C/G ctaatgtcctcctgcaggga	1902
ABCC8	20	intron3+5019	ccatcctaattgtcctcctgc A/C gggaccacaaggtggatggca	1903
ABCC8	21	intron4+14	ggtgagggttaagcaggccac C/T tggggcagggtgggtggga	1904
ABCC8	22	intron4+187	agacactgcacttgcggccc G/A tgtgtctacccagggtcc	1905
ABCC8	23	intron4+204	cagctgtgtctacccagg G/C tccagagggggaggggggt	1906
ABCC8	24	intron4+254	gttcgctgaggttggcggat G/A actttccgtagaagggaag	1907
ABCC8	25	intron4+357	tgtattcatatctgcacgct G/C gtaaatgaatgagtaagtg	1908

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCC8	26	intron5+92	ggcattaggtcaaaactctg G/A tgggacaaaaggggaactg	1909
ABCC8	27	intron6+4205	tctgtagaagtagcatgggg G/A catgaagtcattggcttga	1910
ABCC8	28	intron6+5519	gattccaggggaattgttaa A/C aggaccgggtcttcttaaac	1911
ABCC8	29	intron6+5575	tctgaccagtagcagccag G/C ggggcaagtttccatccccc	1912
ABCC8	30	intron6+6587	gttgccatctgagatcttgc C/T ggaagtagacaagagacct	1913
ABCC8	31	intron6+6747	ttccactggccttttttctgct C/T agtaattgctacattacagg	1914
ABCC8	32	intron9+191	gaggaagctgcctcccggtg A/G ggacaggaagcggcatggc	1915
ABCC8	33	intron10+1963	ccccagggtccaaacctccct T/G tgtccagctagaccattgtg	1916
ABCC8	34	intron10+2724	cctgggacatgttttcttat A/G taacagcatcaaaagatgt	1917
ABCC8	35	intron10+2938	gccccccagggactcctcac G/C tgtccaagtcacctaggag	1918
ABCC8	36	intron10+3094	tcagaggtatgtttttttt T/A ccttccgttagtcagcagt	1919
ABCC8	37	intron10+3368	tctgtctcatatgcggcacc A/G tcagacttctgggcaggcaa	1920
ABCC8	38	intron10+8897	ggtattgattaaaagcctca C/T gggcagagaatttcgcatc	1921
ABCC8	39	intron11+308	tgtgtattgtagaagtgtg G/A gaaatccagaacagaaagct	1922
ABCC8	40	intron11+1171	gccctctcatttcccttcca G/A tgcagagctttccagtgt	1923
ABCC8	41	exon12+7	gcctctgtccacagactttc G/A tgggccacgtcagcttttc	1924
ABCC8	42	intron12+356	accaagaatgaggccatccc T/C tccccagctggctgccccat	1925
ABCC8	43	intron12+934	tgggttcaagatggaatgg G/T gcataactcagcaaaattat	1926
ABCC8	44	intron12+1370	gggaggagggtggacagg G/C atgaaggcagagcctgtgtg	1927
ABCC8	45	intron12+412	ggaggtgggaccaggatgg C/T gtttcttgggaccacaagg	1928
ABCC8	46	intron15+688	actccccggccccactcac A/G tctgccacttccctccctg	1929
ABCC8	47	intron16+4464	actcattccaagtattgtac G/A agaagagaggttaggtactg	1930
ABCC8	48	intron16+4574	ttgaagatcttaagtgttt T/C tggttcactcatttcgcaaa	1931
ABCC8	49	intron16+5011	agctaaaagcaaacagcct C/T tgacctggcaagcattccca	1932
ABCC8	50	intron16+7608	tgtcctactttttttttgac C/G ctataacttcttgacttcg	1933
ABCC8	51	intron16+7730	ccagctcctagtgggctgga G/A ggaaggacatcgcttgggg	1934
ABCC8	52	intron16+8369	ttgcaactgagtttagggcc T/C ggagagcttactgtgtgtg	1935
ABCC8	53	intron16+9708	tgcacttgcgcctacttat T/G ccagaccocaaatgattgggtc	1936
ABCC8	54	intron17+651	tatagattaatgggctctg A/G gtccctcaaaaccttccctc	1937
ABCC8	55	intron17+692	cccttacccttccaaaaaac A/G cttgagatacccttagaggtg	1938
ABCC8	56	intron17+1541	ctcaggatcttctggagg G/C atgtttcactcccatgagag	1939
ABCC8	57	intron18+580	actaagcagattttctacca C/T tgcaccttcccatcccttg	1940
ABCC8	58	intron18+658	gaacaagccctgagaatgc C/T ttccgcacccctactcccg	1941
ABCC8	59	intron18+660	acaagcccttgagaatgcct T/C ccgcacccctactcccgcc	1942
ABCC8	60	intron19+93	gcccttccatcgatcaccca T/C acccagccatctcactcccc	1943
ABCC8	61	intron19+123	tctactcccagggtgcta T/C ctgcactccagccttccat	1944
ABCC8	62	intron19+219	cataggggagaggcgaggaa C/T ggaaggagaggagagagccc	1945
ABCC8	63	intron19+845	tagtatttaacctgcccaca C/T gctgtgtgaagtgtgacct	1946
ABCC8	64	intron20+338	ttccctccacaagcttagac A/G aacaggatcttctctgtgact	1947
ABCC8	65	exon21+10	tttggtagacgggcatcaac C/T tgtctgtgtgtcaacgccag	1948
ABCC8	66	intron21+192	caaggatagcacaaatgacc C/A attcagacttcagatggag	1949
ABCC8	67	intron23+17	gaaggtgggtatattccagg G/A tggccaagcagccacccctg	1950
ABCC8	68	intron23+67	gttctgtagaacctgaact C/T ataaaggttcttctgtcctt	1951
ABCC8	69	intron26+268	gtgagcgtctgcacatccaa G/C taaagattgttttctctcc	1952
ABCC8	70	intron26+308	cgataagttgggttaatttg C/T ccatccccaccatgagttc	1953
ABCC8	71	intron26+348	cagctccctgccctccctc A/G ctctctctccctcagccagc	1954
ABCC8	72	intron26+807	gacagctgctgagtcaggcc G/A agccggcagctgagaaggc	1955
ABCC8	73	intron26+834	cagctgagaaggcgccagct G/C gtcagatgggcttgagaaac	1956
ABCC8	74	intron28+(118-121)	cttccaaaaataaaaaaaa AAAA/Δ cagaaatgaaggaaatagaa	1957
ABCC8	75	intron28+1348	tgggtaagcgggaagacggg G/A ttgaacgcttttgatttgg	1958
ABCC8	76	intron29+1253	ctcttagggtatctgtctaa G/T taagaagagcagagcaaa	1959
ABCC8	77	intron29+1589	cagatccagcttctctgtaa G/C cagcctcagatcaggccaaa	1960
ABCC8	78	intron29+2322	gcgcctcacactcctataac G/A cgcacatgcctgatgcaca	1961
ABCC8	79	intron29+2348	atgccttgatgcacacacat T/C ttcaacacgcacttactcta	1962
ABCC8	80	intron29+2418	agacagctcacctccacaca C/T gtctccacctgggggtgtg	1963
ABCC8	81	intron29+2494	tcagtcctccagacacatg C/A cctctctccacgcagagaca	1964
ABCC8	82	intron29+2735	gcggccaaaggagagtgatga C/T ggaccccaagggttgatcaga	1965
ABCC8	83	intron30+386	gtctctggggctccagcctt C/T gcagcccttgtgtgtgtctg	1966
ABCC8	84	intron33+93	ggcttcgagtcacctctgt G/T cctccagggccgaggcctc	1967
ABCC8	85	intron33+358	agggacctggggcgagacag C/T gaggccaccttgattgag	1968
ABCC8	86	intron38+54	cccaggacagagactggcct G/C ttgtggcctcatcagtgca	1969
ABCC8	87	intron38+466	aggacattctggccacatgc C/A tcatctctctctcccaagcc	1970
ABCC8	88	intron38+529	tggcccccaccgcgggtgtt A/G ttcccaacctcctgacccgc	1971
ABCC9	1	intron3+38	tgtgttttctccttaaaag C/A tattgtttttcccccaaa	1972
ABCC9	2	intron3+305	gctggccttctggcttgac T/A agttgtattttaagaatcag	1973
ABCC9	3	intron3+320	tgcagaagtgtatttttaag A/G atcagagctctgttgaggag	1974
ABCC9	4	intron3+631	ttctgtggaaatcagaggct G/C tctaaaatttcttaatttt	1975
ABCC9	5	intron3+8644	tggagcactcaacattttc A/G agttattactccttcaactc	1976
ABCC9	6	intron4+757	aggatcatgaaacactga A/C tcttagtaaaaactatcttt	1977
ABCC9	7	intron4+1022	tactgtggaatttttcttgc A/C acagagatatgtatttttca	1978
ABCC9	8	intron5-1217	cagtgttagatgtgttttct A/G ttgccatcatctacaaat	1979
ABCC9	9	intron6+(106-107)	tatgagttgttcaaataggc (T)7-9 cagagaattgaatgctttct	1980
ABCC9	10	intron6+1347	tcagtcgtatttctactaaa A/Δ caaaattttgttaagtattgt	1981
ABCC9	11	intron6+1618	ctttttatttgcgttacc G/A ttttactaagggttgatata	1982
ABCC9	12	intron6+1835	cttttaataaatgcaaaactg C/T acacctggtctataaaaaga	1983
ABCC9	13	intron7+407	cctatagaatttttcttttc T/G ttttctcaaaaaaattaaa	1984
ABCC9	14	intron7+423	tttcttttttctcaaaaaaa C/T taaatgtttgtattttatt	1985
ABCC9	15	intron8+743	ttctgtagatgaagcttaag A/T gctagatcttatttgaaaaa	1986
ABCC9	16	intron8+850	tttttaactattgtttgcc T/G tttcattttttaataaaaaa	1987
ABCC9	17	intron9+585	cgaaatttgcgttttagag A/T aatctttgcaaaataaaaaa	1988
ABCC9	18	intron9+1394	atttttcttctgttaagtat G/C agttagtagctgactgcag	1989
ABCC9	19	intron12+1167	atttgaagactttttaaagt G/A agataattgtgtgtgtgtct	1990
ABCC9	20	intron12+1195	tgtgtgtgtctatattctt A/G ctgagaaaaactagaatttat	1991
ABCC9	21	intron12+2123	ataagtgtctccagattgt G/A attggacttagagcaatttc	1992
ABCC9	22	intron12+(2653-2656)	caaaacagaataatgaaaag TAAC/Δ tattatctaaaaataaaaa	1993
ABCC9	23	intron13+(3043-3044)	aacatactctctcctctct (CTCTT) aagtcaaaaatatttagtat	1994
ABCC9	23	intron13+(3043-3044)	aacatactctctcctctct (CT) aagtcaaaaatatttagtat	1995

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCC9	23	intron13+ (3043-3044)	aacatactctcctcctctct aagtcacaaatattatgtat	1996
ABCC9	24	intron14+85	ttctgtgaaagtggtcccaa T/A tggcctttaaatgttttt	1997
ABCC9	25	intron14+275	agtgctacatgtattttttc T/C ggtattcctatgtttatcaa	1998
ABCC9	26	intron14+453	ctcatttcaaaacttgctcat T/C tggactctcccaggcattg	1999
ABCC9	27	intron14+3709	atccctagtgatgtacact G/A agcttgccctccatctttct	2000
ABCC9	28	intron14+3813	ctgatttatattatgtctga C/T ttccaagttcagacatcta	2001
ABCC9	29	intron14+4000	ttctttacttcaatgtacg A/C ccaaatcagaagtgacatt	2002
ABCC9	30	intron16+1466	atccacttggtttaattac A/C ttgtgtagcttgtaaccca	2003
ABCC9	31	intron16+5357	attttgaagagaaattata T/G aacctcccaactgaattt	2004
ABCC9	32	intron17+1368	aatctgggtgttttttttt T/A ctttttcaatttttcagtagg	2005
ABCC9	33	intron20+98	aagtaactcaaggaaagatg G/A ttaacttggtgaatcgtaa	2006
ABCC9	34	intron22+28	ctcatagttcagaagagttc A/C gagcccaattcagaagagtt	2007
ABCC9	35	intron22+194	tgaacctataaaattcta G/A ccatctttggtgaggtgca	2008
ABCC9	36	intron22+1370	ccaggggcaaaagagatga C/T gtaacttaaggattggac	2009
ABCC9	37	intron22+1487	agcaagccaggaaagagtc C/G attaagttgatttagaatt	2010
ABCC9	38	intron23+ (455-462)	atagccatgaaggataagaa AATTAGAA/Δ tgccatttgt tatgtttcag	2011
ABCC9	39	intron24+ (460-465)	aactctttctcttcattctgc TTTAAAA/TTTTAA gcaagccttg aaggagagtg	2012
ABCC9	40	intron24+595	gcattgcaaaataatgaagaa A/G acaacttgctgtacattga	2013
ABCC9	41	intron28-926	aaatatttcagaatttgggg G/A ttagagcatttgcgctcat	2014
ABCC9	42	intron29+2692	ctgtgaagtccttttttttt T/Δ aaagtaatgaaaatttctaa	2015
ABCC9	43	intron29+5464	agacaactcgtctttttgt G/A tgttcacaaattcaacgacag	2016
ABCC9	44	intron29-1830	aactggctgaaagaaaaa A/T tcatattgctgtaaatatt	2017
ABCC9	45	intron31+102	tgcttttgctttccacttca G/A tatccagaaaactctctcat	2018
ABCC9	46	intron33+877	aacatggaactatagtaaat A/G tagtttttttgggttcaga	2019
ABCC9	47	intron36+1281	aatttacacttttttttttt T/Δ gcaggagaaattttgcaaa	2020
ABCC9	48	3' flanking+197	aatggagctcatgcatgtgt T/G ttcaaatatatacatgcaaa	2021
CES1	1	5' flanking-983	tatttcccttagccagcgta T/C cacagtgtgttagtgaatt	2022
CES1	2	5' flanking-814	tcacattgcttgacatcac A/C cctactgctctccacccta	2023
CES1	3	5' flanking-248	agtcctgcaagggtgacacc G/Δ ttatgccacaagcagttggg	2024
CES1	4	intron1+22	tgagtctctgtgaagtcaaa T/Δ atgcggggcacttttgaaa	2025
CES1	5	intron1+30	tcgaaagtcacaaatgcggg G/T cactttttgaaatccttgtt	2026
CES1	6	intron1+1662	aagggaatccctgagctgag C/A atgaccagccagtggtttc	2027
CES1	7	intron1+1726	ctccctggaagtcctcagca A/C tcttagctggttctcgcgcc	2028
CES1	8	intron1+2716	tgcttccaggaagttcatc T/G cagtattatttgaattagc	2029
CES1	9	intron1+ (2747-2749)	tgttaattagcaacaacaaca AAA/Δ gaaagaagctaaatttga	2030
CES1	10	intron1+3288	ttatttgccttaagaaaa A/Δ ctcaagccttagccctggca	2031
CES1	11	intron1+3691	gagaatattgggacacccctt T/G ttcatctctcatccagcat	2032
CES1	12	intron1+3819	tccttcttgcatttattttt A/G gctggatgtttttatgcctc	2033
CES1	13	intron1+3880	aaccagctcaatgggttagg G/A aggcattgatcgtcatccc	2034
CES1	14	intron2+74	gagtaaggcagtcctcccta T/C gggctgacctttgtcttgg	2035
CES1	15	intron2+552	atggaagtggtgtccattca C/A cctggccaagcgtggaagaa	2036
CES1	16	intron2+885	cagtattttagatggttaag A/C attatgatgtaatatattgt	2037
CES1	17	intron2+2001	ttggcatgtcagggtctgcaa G/A actcatgtagaatactacc	2038
CES1	18	intron3+2119	cgctgagtcgatgaatgtc T/C aggccttgagggtgtagggag	2039
CES1	19	intron4+127	taaggcatccaagcccttc G/A taattggacactacctacc	2040
CES1	20	intron4+347	tcgtcatgacacttagcag T/G cagccacagcagtggaagtt	2041
CES1	21	intron4+ (1984-1985)	tgtgtctggaaggtctcgc (C) tgacatctctgctcccccacc	2042
CES1	21	intron4+ (1984-1985)	tgtgtctggaaggtctcgc tgacatctctgctcccccacc	2043
CES1	22	intron5+766	gaggtgggcagaggttcagc T/C cactactggttctcctcagtc	2044
CES1	23	intron5+825	ggagtagatctagcctggaa T/G agcagtgagtcactgaccc	2045
CES1	24	intron5+828	gtagatctagcctggaatag C/T gagttagtcactgacccac	2046
CES1	25	intron5+868	ctcctgagcatgaacttccc T/A cccctccactctgctgtcag	2047
CES1	26	intron7+68	acttctcatttccagctgtc G/C tcttgccaggagacagtttc	2048
CES1	27	intron7+681	cctccaaaatcaacaatcca A/G ttatgcctgtctgctagtt	2049
CES1	28	intron7+885	aggaactatccaaagagaaaa T/C acattcatatacttcgcagg	2050
CES1	29	intron7+2151	gtcgtgtaactgaaaatct C/G agggagtgtaggtctcaggcc	2051
CES1	30	intron7+2470	atatagatatagcaattcac G/A gagtgtgctgggaagaaacct	2052
CES1	31	intron8+128	cgtgtttgtttctgaggccc A/C gagagggttagtgactacc	2053
CES1	32	intron8+2618	ccttagtggaacacatgagt T/C gggctctctcaatctgtga	2054
CES1	33	intron8+2665	aaaaattattcatcaaaagt G/A aaacctaaaattagacatg	2055
CES1	34	intron8+3785	ccatggcgcatggccatgcc G/A gtctatgtgtactgtctcac	2056
CES1	35	intron8+3791	cgcatggccatgcggtcta T/C ggtactggtctcaccctcag	2057
CES1	36	intron10+222	tgaggctggagaagctgcat C/T gctcaccggggctggtgt	2058
CES1	37	intron10+230	gagaagctgcatcgtcacc A/C ggggctgtgtgtcactttt	2059
CES1	38	intron11+1177	ctagcagggtgcctgacaca C/G ctttgacagggaaggcgag	2060
CES1	39	intron11+1311	ggcctatgctctgctctga A/G ctatatatagatttccatc	2061
CES1	40	intron11+2025	ttctcatttgggtgctaaag A/G ttaaaaattagcataacact	2062
CES1	41	intron11+2029	catttgggagtgctaagatta A/C aaattagcataaacattcca	2063
CES1	42	intron11+2317	cattcacaagaagctctttct T/C ctatggttggctctgagttt	2064
CES1	43	intron11+3887	caaatatttggctctaatc C/T gcttccacctcagacagcta	2065
CES1	44	intron12+2311	gcgcctctgggcactctcact G/A tgcattgcttaggcgccttgc	2066
CES1	45	intron12+2331	gtgcatgcttaggcgccttgc C/G ggcctgtgttttttcagaa	2067
CES1	46	3' flanking+71	aacgggtgatgaagaggcgca T/C gtgagaaggaaggtggttt	2068
CES1	47	3' flanking+362	ttgcatggcacttactgacc G/A ttgacagggcctgcaacacc	2069
CES1	48	3' flanking+581	atttctggattctgttagta C/T gtgaaaagctctaaagcatg	2070
CES1	49	3' flanking+1348	aaatctgctgtggggagaga G/C agcaaaagcatgcagatcaac	2071
ABCB4	33	intron22+767	acagtggtgctgagcataga A/Δ cctgtagcaatccaccagca	2072
AADA	23	intron2+46	gtgctaggttagtttcga A/G acattttactaagtcttcag	2073
AADA	24	3' flanking+208	aagtctaaaaaataaaaaaa A/Δ tcaacttggttactttgggga	2074
ABCA4	1	5' flanking - 1005	tgccatcataagcagaacct A/C tctctctcttcttgggaagt	2075
ABCA4	2	5' flanking - 819	gtctagagcttttcaaaagag A/T acacattctgagatttgagg	2076
ABCA4	3	5' flanking - 680	agcaccacccattgcagg C/A tgggaatgacagtaattggcc	2077
ABCA4	4	intron1 + 208	tgcccttccagggaagatgt G/A ttctctgtctcagccaca	2078
ABCA4	5	intron1 + 234	ctgtctcagccacatgaaa A/G tcttttgctaccgtgcctg	2079
ABCA4	6	intron1 + 510	agctcagatcaagtcacag T/C ttaactggacacattatttt	2080

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA4	7	intron1 + 1527	gcttaacaaccagcataaaa G/A agagcagcatgggacacgt	2081
ABCA4	8	intron1 + 2077	caggactgtagctgctggcc T/C aaatgagccatctctgtg	2082
ABCA4	9	intron1 + 2174	ccctctcaatctggcctttc G/C ctggcatgggtggcgactc	2083
ABCA4	10	intron1 + 2246	gctccagggagatggagcc A/G ctgggtgtagggccttggc	2084
ABCA4	11	intron1 + 2364	ttctgtctggcagccctccc G/A atggctccccacctgtacc	2085
ABCA4	12	intron1 + 4243	ctccctgggttatgctgta C/G gcagttaaagctcaaggaca	2086
ABCA4	13	intron1 + 4287	atgccgtctggggaggaga A/C gctgagcatgattttggaag	2087
ABCA4	14	intron1 + 4309	ctgagcatgattttggaagc C/T ggcagaagaggctatttga	2088
ABCA4	15	intron1 + 4416	tcagcaaccgcccccgc C/T ccgcaaaaaaacacacact	2089
ABCA4	16	intron1 + 4996	tttaccctgggaacaggcag G/A ccaagctggctgttccctc	2090
ABCA4	17	intron1 + 5007	aacaggcaggccaagctggc T/C ggtccctccctgatacaca	2091
ABCA4	18	intron1 + 5080	gtgtgtggctggtttcttag C/G aagcaccatggttccaagt	2092
ABCA4	19	intron1 + 5152	gggagatgaactaagtga G/A ggcaggcctacaaggttga	2093
ABCA4	20	intron1 + 7110	ccactggatctgcttttga A/G tcaaggtccttaagctcca	2094
ABCA4	21	intron1 + 7290	gatttttggcttttgcaa T/A ggtcacagtcattattica	2095
ABCA4	22	intron1 + 7483	tctgagccttttccctaac T/C gcagatgagtggtacaga	2096
ABCA4	23	intron1 + 7497	cttaactgcagatgagtg C/T tacagagaactcttactac	2097
ABCA4	24	intron2 + 1067	tcaagcagcagcagcaactg C/A gtggagctcttctgaactaa	2098
ABCA4	25	intron2 + 1106	aacactcctatgcccctctc G/A gcacaaatgacgtgtcccc	2099
ABCA4	26	intron2 + 1119	ccctctcggcacaaaatgac G/A tgtcccccctgttccctc	2100
ABCA4	27	intron2 + 1243	caccacagcagggactggc A/T cacatgagatgctcctgtt	2101
ABCA4	28	intron3 + 26	tggtgagatccctaccatg C/A ggggaggaagtgcacacc	2102
ABCA4	29	intron3 + 101	agcatggagcactgagttt C/T ttgtgctttgctgagcccc	2103
ABCA4	30	intron3 + 330	tgcttgggtgagtgaaatc T/C ttaggagaaaaactcagtt	2104
ABCA4	31	intron3 + 470	tgaagtcagggtttacaaagt C/G aagtttactcttggagaa	2105
ABCA4	32	intron3 + 634	tgaaaaccaatgaccctctt T/C ccaagaaaaatggccacata	2106
ABCA4	33	intron3 + 1016	ccttggggagctcagtagt A/G ttctccaggagaaagcctgc	2107
ABCA4	34	intron3 + 1554	gaaagtgtgggtttcatgttt T/C gcactcacattatgagtaa	2108
ABCA4	35	intron3 + 1686	ctagacattctcacagagcc A/G agggcagcaaggcggggc	2109
ABCA4	36	intron3 + 1823	ttcactctctccatggacc A/G gtctccctgctcctcaatg	2110
ABCA4	37	intron3 + 1938	caaatctcgggaacaatc G/A ggttgaccagctttattct	2111
ABCA4	38	intron3 + 1951	acaaatcgggttgaccacg C/T ttattctccctgtccatca	2112
ABCA4	39	intron3 + 2063	ggctgtcagagcctacatgc G/T tgaatgggtggaaggcagg	2113
ABCA4	40	intron3 + 2079	ctgcgtgaatgggtggaag G/A caggtctcagagaattgggt	2114
ABCA4	41	intron3 + 2186	agacacacagagcatgggac C/T gagaggcagcagaccctgc	2115
ABCA4	42	intron3 + 2214	gagcagaccctgccaaaact G/A ggagactgaatagatcgcctc	2116
ABCA4	43	intron4 + 2717	cgtgcttctgcacagccacc T/C ggggaaggtatgcgatgtt	2117
ABCA4	44	intron4 + 2802	attctcagcagggagatta A/G tggtaaaagccaggaatgg	2118
ABCA4	45	intron4 + 3182	ccccagagccacagcagcc C/G gtctcctgggtgtgtt	2119
ABCA4	46	intron4 + 3515	agtataataaaagcaggagc C/T atagcccccaactctcaaga	2120
ABCA4	47	intron4 + 3907	aggggagtgacatgggac C/A actctcagggaaaccattac	2121
ABCA4	48	intron4 + 3923	gcaccactctcagggaaccc A/G ttactgtgagagaagccact	2122
ABCA4	49	intron4 + 3952	agagaagccactgtgccact G/C tgtgtcgaacttcaagacc	2123
ABCA4	50	intron4 + 4125	ggctgtccagcacacaggg G/A aggcctcttgccactgggg	2124
ABCA4	51	intron4 + 4637	aatacacttggcccaagggtca C/T cttaactgttaggtgtt	2125
ABCA4	52	intron4 + 5319	acctctaggggctccacag A/G ccccaagaacagaaccttc	2126
ABCA4	53	intron6 + 2266	cacccttgacagcctcagac A/G ggtcctgggggctgttctc	2127
ABCA4	54	intron6 + 2857	ccagaggagaaagctctgcc G/A tagtcggcctcagttaccca	2128
ABCA4	55	intron6 + 2861	aggagaaagctctgcctag T/C cgccctcagttaccacgga	2129
ABCA4	56	intron6 + 3078	gcaggcattaaaatgggact T/G tgcctttattgtcctgggc	2130
ABCA4	57	intron6 + 3375	ttaaatgccaaatgagttct C/G attaacaaaagaaggagaa	2131
ABCA4	58	intron6 + 3412	ggaaaaatctcagtaaacac C/T gtgacggcatctaccactt	2132
ABCA4	59	intron6 + 4635	ctttcgggtggtattgtcta C/T gtcaagtgtctgggaagcc	2133
ABCA4	60	intron6 + 5576	ccactaatatgattcttta G/C taagcgtctcaatatacac	2134
ABCA4	61	intron6 + 5925	aaaaagcattttgctcttatt A/G aaagcacagcccttttgag	2135
ABCA4	62	intron6 + 6916	cccagacaaccacagcagag A/G cctcttagggccggaaatcat	2136
ABCA4	63	intron6 + 6993	agcacaggtacagggcctaa A/G ggcccttagactgacctca	2137
ABCA4	64	intron6 + 7242	ttgccattttgatctgtgac T/C ttttttccagaaatgattt	2138
ABCA4	65	intron6 + 7454	atggagggtcctcctgggac T/C aggcagtattcagagatgta	2139
ABCA4	66	intron6 - 264	aaacagcaattagaatcact T/C tgaatagttagatatttta	2140
ABCA4	67	intron6 - 86	aggaggggggagttttcaa A/G catataggagatcagactgt	2141
ABCA4	68	intron6 - 32	tatacctacaaacatatata T/C atttaaaaaattgttttact	2142
ABCA4	69	intron7 + 828	gatgtgggaaagttagagaa G/C agcccaattgtactaatgctc	2143
ABCA4	70	intron7 + 1019	aggcttctgactgtctaga T/C agcaagtctaactattgtg	2144
ABCA4	71	intron8 + 374	gtaaacacggctgtgggatg C/T ttttacaacacaatatcgt	2145
ABCA4	72	intron8 + 874	tgatgagctgttattgtgt G/A ggtacagcctattaatttag	2146
ABCA4	73	intron9 + 605	tcgtgtctctgtctgtatct C/T tgtctggttttagggcaact	2147
ABCA4	74	exon10 + 1268	aacttttgaagaactggaac G/A cgttaggaagtgtgtcaag	2148
ABCA4	75	exon10 + 1269	acttttgaagaactggaac C/T gtaggaagtgtgtcaag	2149
ABCA4	76	intron11 + 5236	ggcctggcacagatgaata C/T tattcagagttcacagtga	2150
ABCA4	77	intron11 + 5270	cagtgatttttcatattcata A/G tatatttgattttcaggtct	2151
ABCA4	78	intron11 + 5687	atcatgtaatgtacttttaga C/G tcagatatataaatattgt	2152
ABCA4	79	intron11 + 7136	gacttcccaacttacccttag T/C ggagctgtatgcacatagaa	2153
ABCA4	80	intron11 + 7180	acgctcataaatgcttctct G/A ggcgttaaaggttgaatttt	2154
ABCA4	81	intron11 + 7701	gttagacgcaggcattaccct C/T gtggcttttgcacagtgta	2155
ABCA4	82	intron11 + 8073	gggatttttgcacacatcca T/C tggcatttctcaaaaggac	2156
ABCA4	83	intron11 + 8586	cagctgcctgcgtgggagag G/A gctcaaacctcttccggcag	2157
ABCA4	84	intron11 + 8893	agcaaaagatgccctttgact C/T cttttcccaactagtgtgct	2158
ABCA4	85	intron11 + 9257	gaatgaggtcacttgcctga T/A ggcaggtggcttccccatga	2159
ABCA4	86	intron11 + 11234	cccaataattttgttttttc G/A ttttaggaattaaatttcag	2160
ABCA4	87	intron11 + 11641	aagaacaaacattattatga C/G aacttttggtgtgtgacctg	2161
ABCA4	88	intron11 + 11808	tggtattttctaaagaata C/T caattccatttccctttaac	2162
ABCA4	89	intron11 + 11923	aagatcattattaatatctc A/G tcagcgtgtgtcactttaag	2163
ABCA4	90	intron11 + 12055	tgagaacattacatgggacc T/C gccccaggcagtgaggct	2164
ABCA4	91	intron12 + 305	tcaccctgtggctggagagt G/A tgagtgtacatccaagccc	2165
ABCA4	92	intron13 + 1461	ttgggttcagtgatcagcat G/A tagctgtctactcagatccc	2166
ABCA4	93	intron14 + 1237	aaggcaccaaaagtcttag A/G gatgagggagagctgagc	2167

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA4	94	intron14 + 1268	ggagctgagcccttgcct T/C atctaggtttccctgttct	2168
ABCA4	95	intron14 + 1309	ttcccatccctcagctgtct T/C ctttccagttaccaacatg	2169
ABCA4	96	intron14 + 2979	tcacctgtgtgggtagcaaa C/T ctccagaaatcaagtataga	2170
ABCA4	97	intron17 + 23	gagtcctttaaaacacaaat C/G ttaatgtttgaaatcaactc	2171
ABCA4	98	intron17 + 204	tgctggccctgtgtgatca T/G gaatggctgatcatggatga	2172
ABCA4	99	intron17 + 715	gggactcccttagagatgaa G/A tacttcccatctgtttgtt	2173
ABCA4	100	intron18 + 1282	ggaagatgaagaacctaaag C/T gcttccagaaattcatgagg	2174
ABCA4	101	intron18 + 1531	gtctacccttaggaccatt G/A taagatatacttaggtaatt	2175
ABCA4	102	intron19 + 1802	actgctcaccaggaggcaa C/A gcctcagtcattgcaccgaa	2176
ABCA4	103	intron20 - 195	acagattattccattgtatg C/A atgaactatgttaagccatcc	2177
ABCA4	104	intron23 + 755	ctggctgccctgggtttc C/T tatgtccatccacggggggg	2178
ABCA4	105	intron26 + 497	ctgagttaggctctagatggg G/A acactttggatgaatgagg	2179
ABCA4	106	intron26 + 702	tatcaatacaactcagacag T/G cagtcctcgtggccctttga	2180
ABCA4	107	intron27 + 156	cctgctttccaaacccttat C/T ttgattotttgtaacatgaa	2181
ABCA4	108	intron27 + 385	tttaagaacagtgtatgc G/A tgactgtctcttgaaatgc	2182
ABCA4	109	intron28 + 299	gacatgccatcagaccactg C/T gagtggcaggcagccatcc	2183
ABCA4	110	intron29 + 168	ctccttccacacttgggtgc G/A gggacattcactacctcta	2184
ABCA4	111	intron29 + 497	gctgtcaataaggacacaaa C/T agactaatttcaaatctctc	2185
ABCA4	112	intron29 + 567	agctgtcaggaataaaaagg G/A agacaaaacgattcccaagc	2186
ABCA4	113	intron29 + 577	aataaaaaggagacaaaaa G/A atccacaagctagagatggt	2187
ABCA4	114	intron30 - 2494	aatcacagctcatctgtgc A/G tcatagggatcccaaaaaga	2188
ABCA4	115	intron30 - 2169	aagttaacagccaaagtctt G/A gaaaaggcgaagcagttcc	2189
ABCA4	116	intron31 + 535	ctaactgtgaattatcatct T/G tgatcactgcctcttgagat	2190
ABCA4	117	intron31 + 957	gagtttccagcagcaaatct C/A cagtatgaaatttggattt	2191
ABCA4	118	intron32 + 445	tcacagggtttagaacctca C/T caagtgaggactctaggagcc	2192
ABCA4	119	intron33 + 48	aggatttttgacttgcata C/T taccatgaatgagaaactct	2193
ABCA4	120	intron35 + 129	tgtttagtcaggccatatg A/C acatccgactttcaataaag	2194
ABCA4	121	intron35 + 209	tctcccaacatttatgtgg C/A aagtaagtttacaatttgggt	2195
ABCA4	122	intron36 + 3209	ttgaggcctccacacccacc G/A gcaggttgcctcctgaggaa	2196
ABCA4	123	intron36 + 3542	cttggcaggaggtagggca T/C ggggtgggttagggagcta	2197
ABCA4	124	intron37 + 304	ctgggggagcagcatcccca A/G cccctcaccagctctgact	2198
ABCA4	125	intron37 + 525	taaatttgaatgagtaattc A/G tccatctcggcctcagtttc	2199
ABCA4	126	intron37 + 766	tgttgcaggctggagaaacc T/G cctatgaattgtacaggct	2200
ABCA4	127	intron37 + 856	aaaaccccatgaagtgttca A/G ggcaggcctcattatctcca	2201
ABCA4	128	intron38 + 62	tagtagagtagtgtttgtc G/A agcagagccaggggcaagca	2202
ABCA4	129	intron38 + 761	tccttgggcaagttaattct G/A atgaagagactgggtgtct	2203
ABCA4	130	intron38 + 1315	cagagtcagactctggaaag G/T cgggggataagaacacagc	2204
ABCA4	131	intron38 + 1316	agagtcagactctggaaag C/A ggggggataagaacacagcc	2205
ABCA4	132	intron38 + 1526	ccaacatttgcataagcacc G/A ccttcaaaaacctgttattt	2206
ABCA4	133	intron38 + 1561	gtattttcatgtaattatc C/A gatacacagctgctatggaa	2207
ABCA4	134	intron38 + 1562	tattttcatgtaattatcc G/A atacacagctgctatggaaa	2208
ABCA4	135	intron38 + 1674	ccagctgaacacacagctgcc G/A ggtgtgtgctgatataaaca	2209
ABCA4	136	intron38 + 2867	tgccctggctagacaagggg A/C agctcccgcccatagaaac	2210
ABCA4	137	intron38 + 2874	ctagacaaaaggaggagctcc C/T gccactagaaacttgcagg	2211
ABCA4	138	intron39 + 123	gaggggaccttgttggctg G/A aggtgtcctgccagctggag	2212
ABCA4	139	intron40 + 1904	gacactgtacagccagccca A/C tccgtacccttttcttctat	2213
ABCA4	140	exon41 + 5814	ggaataaaaactgacattct A/G aggtacatgaactaaccac	2214
ABCA4	141	intron41 + 122	atttggttccagttttatg T/G agggatcatctcctgtgtt	2215
ABCA4	142	intron41 + 287	tctgcagagcatgggtcagc C/T tcgagatgtctcagtaactca	2216
ABCA4	143	intron41 + 411	cctcttccctccttgcctct C/A accctgtcctcagttctcagt	2217
ABCA4	144	intron41 + 443	gtttctcagtcggttttctc G/A tatcttcagatttatccag	2218
ABCA4	145	exon42 + 5844	cgatcttgcagatttatcc A/G ggcacctccagccagcagt	2219
ABCA4	146	intron43 + 328	ttttagctctattcctataa A/G aatgcaccattgttcccat	2220
ABCA4	147	intron43 + 345	taaaaatgcacattgtctc C/G cattacctccctccacacat	2221
ABCA4	148	intron43 + 370	acctccctccacacattttt A/G caaaacgtttcaggagttt	2222
ABCA4	149	intron43 + 376	ctccacacatttttcaaaa C/T gtttcaggagtttactagag	2223
ABCA4	150	intron43 + 670	ttaaacagactgggtcccta T/C gggcaggacagagagatga	2224
ABCA4	151	intron43 + 701	gagagagatgagctctcactc A/G tctcctctttctcgtctgc	2225
ABCA4	152	intron43 + 822	gttaggtgtgtctgaactct G/A tccagcatctcgttgactgc	2226
ABCA4	153	intron43 + 915	ggcaggagcagctcctgagca C/T gcttcaactggctcagacagg	2227
ABCA4	154	intron43 + 1242	actgagctggagcctagaaa G/T aaactatagcttaagacac	2228
ABCA4	155	intron43 + 1671	tagagaagtttacttccatc G/A ggacacatgcatttttcta	2229
ABCA4	156	intron43 + 2036	ttgaaggatactcagtaatt G/A cttttttttcttcagttatt	2230
ABCA4	157	intron45 + 176	gtgtttgtttcacacagctc C/T ggagaaaaaacagtcaaggc	2231
ABCA4	158	intron45 + 193	ctccggagaaaaaacagtc C/T gccacagccttgacttggga	2232
ABCA4	159	intron47 + 238	cccaagttcttgatggggc A/G tctgatcaggatgcagtcag	2233
ABCA4	160	intron47 + 269	atgcattgcagagcctggctg G/A gatgaggggagcctgtacc	2234
ABCA4	161	intron47 + 326	accatttatctcaacagatc C/G gggacctgtggcctatttacc	2235
ABCA4	162	intron47 + 715	aagtoactaagctggttgg G/A ggaggaaacagcacataacc	2236
ABCA4	163	intron47 + 734	tgaggagaacagcacataac C/T cacccttatctatgctgaggt	2237
ABCA4	164	intron47 + 931	ggacactgcagatatactca T/C agaaatagcagcatgtcagg	2238
ABCA4	165	intron47 + 1260	acactctctggtggaccatc A/C ctctccaaagagaggttaac	2239
ABCA4	166	intron48 + 1663	tctcgtctctcttctacctc T/C aggtgtttgtaattttgct	2240
ABCA4	167	intron49 + 127	agagagccccaacccaaccca C/T ggtccctacaaagtccccc	2241
ABCA4	168	intron49 - 1545	gcagtttaattccaaactttt C/A tcccttattggatgagatca	2242
ABCA4	169	5' flanking - (1441-1400)	gtaaatctcagttgaatcag (TCA) 14-16 atttttcagctcgttccctg	2243
ABCA4	170	intron1 + (4712-4720)	gaggggcccgggactatagg (A) 8-10 cagcctaattcaaggatgag	2244
ABCA4	171	intron1 + (7295-7304)	ttgttgggtttgcaatggat CACAGTCAT/Δ ttattcactc	2245
ABCA4	172	intron2 + (951-952)	attcattcac	2246
ABCA4	173	intron3 + (2642-2653)	cctgtccatcagactctctc TT/Δacctctccccaggagccca	2247
ABCA4	174	intron4 + 5202	cctgggtgacagagcagat (A) 10-12 tagcatgagatattattact	2248
ABCA4	175	intron6 + (3029-3044)	cacaaagcatctgacacccc C/Δ atccagccctggctaacttt	2249
ABCA4	176	intron6 + (5138-5139)	cactaaaaacaaaaatttacc (A) 16-18 cctgaagaaattgcaggca	2250
ABCA4	176	intron6 + (5138-5139)	ttcatgacagatcagatgtt (G) cttttatggatttacaaga	2251
ABCA4	177	intron6 + 5985	ttcatgacagatcagatgtt cttttatggatttacaaga	2252
ABCA4	178	intron6 + 6094	tttctcttcaaacccccc C/Δagactaggagaaggtctgtc	2253
ABCA4			gggacggacagaaaaagacc T/Δagtttctgttgagccaaaga	2253



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA4	179	intron6 - 161	tattttttcaattaaataa A/Δ gagtttttgtttctaaaag	2254
ABCA4	180	intron7 + (809-810)	ggcccgagtagtcacactga (T6) tggggaaagttagagaaga	2255
ABCA4	180	intron7 + (809-810)	ggcccgagtagtcacactga tggggaaagttagagaaga	2256
ABCA4	181	intron8 + (472-484)	atcttccccacotttcacta (T) 10-13 ggtctctatgggttaaagg	2257
ABCA4	182	intron9 + (48-71)	gtaccctggacotcccagaa (G) 11-13 gagagagatgtccttctctg	2258
ABCA4	183	intron9 + 554	atagggcgagaaaagacaca A/Δ ccaaaagtctctctcactt	2259
ABCA4	184	intron10 + 11	catgatcagagtaagggggg G/Δ ttggaggatggggaggagg	2260
ABCA4	185	intron11 + 4242	ggagaggaaatgatgttagt G/Δ cctcctgtaaataggcccgag	2261
ABCA4	186	intron11 + (13743-13753)	tgctcttttgggttaatgg (T) 9-11 cctcttcaggagagaagaaa	2262
ABCA4	187	intron13 + (636-637)	cgggttgggggttggggg (G) ctcatittgtcattatagatg	2263
ABCA4	187	intron13 + (636-637)	cgggttgggggttggggg ctcatittgtcattatagatg	2264
ABCA4	188	intron18 + (569-570)	tgctgcctcatcttctctc TT/Δ aaactagtctgtatttctc	2265
ABCA4	189	intron20 - (304-297)	tataacctgactttttttc (A) 7-9 ggattgtctttttaacata	2266
ABCA4	190	intron22 + (1236-1246)	gctgaattagtcccttggg (T) 9-11 agttaactcctgattttgc	2267
ABCA4	191	intron26 + (4626-4635)	gataatcaatgctgtaaagg (A) 9-10 tggcattagagatccagacc	2268
ABCA4	192	intron33 + (115-116)	taaaaccgtctttgtttttt G/Δ ttacatggtttttagggccc	2269
ABCA4	193	intron36 + 1078	taagcagctatcaatttaaca A/Δ tacaaaaccagagattatca	2270
ABCA4	194	intron37 + (290-291)	ccttgaccaaaagcctggggg (T) cagccattccccaccctc	2271
ABCA4	194	intron37 + (290-291)	ccttgaccaaaagcctggggg cagccattccccaccctc	2272
ABCA4	195	intron38 + 896	ataaaaagaggggaaaaaa A/Δ gaaggcagtcgctgcagggc	2273
ABCA4	196	intron38 + (1209-1210)	gtggacccttgagactgact CT/Δ ttccagatctgttaggggt	2274
ABCA4	197	intron38 + 1322	actctggaaggcggggg G/Δ atagaacacagcccagca	2275
ABCA4	198	intron38 + 3107	ggggcccccctgctgaagag A/Δ ggggggggtgggggttggccc	2276
ABCA4	199	intron40 + 152	ttttctcaataatacaagt A/Δ gaggatcgggttaaaatagg	2277
ABCA4	200	intron43 + 330	tgtagcctattcctataaaa A/Δ tgcaccattgcttcccatta	2278
ABCA4	201	intron43 + 1354	tttaattggcccgccatgc C/Δ ttgttgggtttttgtcattg	2279
ABCA4	202	intron47 + (1305-1308)	catctgctgaaggagaaag AAAG/Δ caccatggcccacgccccta	2280
ABCA7	1	5' flanking - 1598	agaattgtggccccctcccc C/T cctgcatcctctgcagaag	2281
ABCA7	2	5' flanking - 1594	aatgttggccccctcccc C/T ctgcatcctctgcagaagcc	2282
ABCA7	3	5' flanking - 1180	ggccagtgagtgacggggag G/A tgcaccaaatagcagcgtgc	2283
ABCA7	4	5' flanking - 460	agagctggggctgctgcctcc A/G gctgggcaactgcctgtctc	2284
ABCA7	5	5' untranslated - 9	ctctgtccctgccccctgcc A/G gctcaccatggccttctgg	2285
ABCA7	6	intron5 + 91	ccccggcccaaggacctccc G/A ttccaggcatccaggctgtc	2286
ABCA7	7	exon6 + 563	cagcttgttggaggccgctg A/G ggaactggcccaggaggtac	2287
ABCA7	8	intron8 + 103	gcccggggtcacggaact A/G ttgaagaagtaggagttag	2288
ABCA7	9	intron8 + 166	tgcggagatcagaggcaca C/T gcaggagcaaggcagagggg	2289
ABCA7	10	exon9 + 955	acggaccttcgaggagctc A/G cctgctggaggatgtccgg	2290
ABCA7	11	intron9 + 421	tttttttttttttttttttt T/A taagagatggagtctcactc	2291
ABCA7	12	intron9 + 463	gttgcccaggctggactgca G/A tggcagatcttggctcact	2292
ABCA7	13	intron9 + 467	cccaggctggactgcagtg G/C gagatcttggctcactgcaa	2293
ABCA7	14	intron9 + 488	gagatcttggctcactgcaa C/T ctcgcctcctgattcaag	2294
ABCA7	15	exon10 + 1184	gcacacgctgatgtggggc A/G cctggtgggacgctgggcc	2295
ABCA7	16	intron10 + 10	gagtgacggagtgaggccc T/C gtccacctgcggggtctgtt	2296
ABCA7	17	exon11 + 1388	cctgggccccggccacgtgc G/A catcaaatccgcatggaca	2297
ABCA7	18	intron12 + 115	caggctcggaactttgcacc T/G ttacaccactccacgtgacc	2298
ABCA7	19	exon13 + 1824	cccttctctgctcagccgc A/G ctgctggttctgtgtctcaa	2299
ABCA7	20	intron13 + 55	ggtgctgtggagggtgacag A/G caggggcgcccccacgtggg	2300
ABCA7	21	intron13 + 78	ggggcgcccccacgtgggt G/A gcgccccagcccaatccag	2301
ABCA7	22	exon14 + 1851	cgttgcctctcacagctggg A/G gacatcctccctacagcca	2302
ABCA7	23	exon15 + 2153	cgaggcgccgagtgagcaca A/C cgtgggaccccgccctacgg	2303
ABCA7	24	intron15 + 34	ggcggggctccggccgggt G/C gcacctgcttggcgaggcg	2304
ABCA7	25	intron16 + 8	ctggacccaagggtgagggc A/C ctacagggttaataagctgg	2305
ABCA7	26	intron16 + 161	ttcccagcttttataggcc C/T cggcccgagcaggtcccggat	2306
ABCA7	27	exon17 + 2385	caccccatctctgcaagtgt G/A gtagaaggagcaccgcccgg	2307
ABCA7	28	exon17 + 2421	ccggcctgagtcctgggt C/A tccgttcgcaagcctggagaa	2308
ABCA7	29	intron20 + 166	cgagacagtaagagttggg A/G tagacagaggttcccctgga	2309
ABCA7	30	exon21 + 3027	ctgctgggagaccgtgtggc C/T gtggtggcaggtggccgtt	2310
ABCA7	31	intron22 + 1386	gggtggggcgtgagccggg C/T tccctgaagcaccctttgt	2311
ABCA7	32	exon23 + 3417	gggatctccgacaccagct C/G gaggaggtgtgagccctggg	2312
ABCA7	33	intron23 + 147	ggagctctgtggctcagat G/A tcccttgggaagccctgggg	2313
ABCA7	34	exon25 + 3528	gctggcctagacgtaacctt A/G cggctcaagatgccgccaca	2314
ABCA7	35	exon29 + 4046	cccagcctgccagtgtagcc G/C gcccggtgcccgccctgc	2315
ABCA7	36	intron30 + 81	ccccctggagctctccgg C/A cccccggccctcagctccc	2316
ABCA7	37	exon31 + 4239	ctgctgcatggccccacag A/G tacggaggtctctcgtggg	2317
ABCA7	38	intron32 + 1	caaggagcagctgtctgagg G/C tgcactgtgagtcctccac	2318
ABCA7	39	intron33 + 54	ccactgttgcactgccct G/A tctggcccttgttagcagg	2319
ABCA7	40	intron34 + 245	cagtaactttggaggccgag G/A caggaggactgcttgtggcc	2320
ABCA7	41	exon36 + 5057	ggtgagccggatcttgaaac A/G ggtcttcttatcttcccc	2321
ABCA7	42	intron38 + 65	ggcccaactcacctttttaa A/G gacctgcactctcccagga	2322
ABCA7	43	intron40 + 154	ctctacctcccacacgcgga C/G caggccctgagacaccctg	2323
ABCA7	44	intron40 + 277	ctgagcccccgccgccccca T/C cccacgctggcccggaac	2324
ABCA7	45	exon41 + 5592	gtggcccggggaaccagtg C/T gcgcacctgagcatgggata	2325
ABCA7	46	intron41 + 286	ctccttgactctgctctctg T/C ggccctgcccacttgcctct	2326
ABCA7	47	intron41 + 389	tggcgttccagtttgcag C/T cgtttcactgctcttccat	2327
ABCA7	48	intron41 + 991	cacactatggccctgccccca C/T acccatcccagctccaccca	2328
ABCA7	49	intron41 + 994	actatggccctgccccacac C/T catccagctccacccacac	2329
ABCA7	50	intron41 + 998	tggccctgccccacacccat C/G ccagctccacccacacccatg	2330
ABCA7	51	intron41 + 1001	ccctgccccacacccatccc A/G gctccacccacacccatggcc	2331
ABCA7	52	intron41 + 1051	actcatgctggctccaccca C/T accatggccccgccccatac	2332
ABCA7	53	intron41 + 1131	tggcctgccccatggccatt A/G tggccctgctccacactcaa	2333
ABCA7	54	exon44 + 5985	gaagcgtctgtctgcgcct G/A gccatcatggtgaatggggc	2334
ABCA7	55	intron44 + 201	ggcgagagaccaggagggt G/C agccgggggtctgggttga	2335
ABCA7	56	intron44 + 233	ctgggtgatttagaagaca C/T aatcaggtgtggttggagt	2336
ABCA7	57	intron44 + 313	agttagggggggccgtgtt A/G gtggcgggggccatagga	2337
ABCA7	58	intron44 + 337	ggcgggggccataggaaagt G/C ggccgggtattttattgtt	2338
ABCA7	59	exon45 + 6133	tggcgccgagttccctggg G/T cggagctgcgcgaggcacat	2339
ABCA7	60	exon45 + 6159	ctgcgcaggcacatggagg C/T cgcctgcgttccagctgcc	2340

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCA7	61	Intron45 + 27	acggcgccggggctgggctg G/C gggaggcaggctggggcca	2341
ABCA7	62	3' untranslated + 6580	aaggctggagagaagccgtg G/C tggtaaacctgtgcatgt	2342
ABCA7	63	3' flanking + 108	caagctagtggtgacatac G/A ggcgaagtggcattcatag	2343
ABCA7	64	3' flanking + 376	cttacaggagcccggtgtcc C/T ggagcacaggccaggcccg	2344
ABCA7	65	3' flanking + 687	cagcaggagagacttggggag G/A gggagagagttcacactgc	2345
ABCA7	66	3' flanking + 688	agcaggagagacttggggag G/A gggagagagttcacactgc	2346
ABCA7	67	3' flanking + 1169	cctcgacctgaccttca C/T gggctgcaggccgggtgat	2347
ABCA7	68	intron9 + (398-422)	cgtgaactaccagtcctgc (T) 22-26 aagagatggagtctactct	2348
ABCA7	69	intron12 + (175-184)	ggggactctgagggtctggt (G) 8-10 actctgagggtctggggcc	2349
ABCA7	70	intron30 + (81-87)	ccccctggagctctccgg (C) 6-7 gcccctcagctccccctcc	2350
ABCA7	71	intron34 + (349-361)	agaaagagaaagagagaa (A) 12-14 cagaatgtgctttgggtga	2351
ABCG1	1	5' flanking - 1772	cctgggttcagcaggggcc C/T cacacctgcaatgggtgct	2352
ABCG1	2	5' flanking - 1754	cctcacacctgcaatgggtg C/T ctggggagaggtgcagatg	2353
ABCG1	3	5' flanking - 1450	tcacaaagccagatttggtg I/C ttttgggctcttttgaat	2354
ABCG1	4	intron1 + 4	ctgggtggagaaagagga G/A ggaaggccgctgcttttgt	2355
ABCG1	5	intron1 + 576	agctcaggaggtgtctggaa C/T gccacacagtcaggagttt	2356
ABCG1	6	intron1 + 1426	aattctccttctcaactta G/G gaaatatttatagaaat	2357
ABCG1	7	intron1 + 2342	agagcctgcaatggggccg C/A agggacctgccatgactca	2358
ABCG1	8	intron1 + 2399	gaggggttgacagacaggt A/G tgtctgtgtgttccagctg	2359
ABCG1	9	intron1 + 2406	tgacagacaggtatgtctg C/G tgtgttcagctgtgtgttt	2360
ABCG1	10	intron1 + 2911	ccctctctgtgccactgtt G/C tcccaacacagcctgttct	2361
ABCG1	11	intron1 + 4363	tataatagattcctagcaga A/G aacataattgtgagaggaac	2362
ABCG1	12	intron1 + 4752	gctttcagagccattca C/T aagggtctcattttatagg	2363
ABCG1	13	intron1 + 5026	ccaggtctgtgggatttgc G/A ccaaaagaggcgttagcaag	2364
ABCG1	14	intron1 + 5532	gggttaaatattccggcgag C/T gccaaagcagattatctga	2365
ABCG1	15	intron1 + 5681	gctaaagtgcattgaaagca I/C catgaataatcctttcagg	2366
ABCG1	16	intron1 + 6290	tcacagcagattcatgagag I/A tgaattgttagcccgcatgt	2367
ABCG1	17	intron1 + 6386	agatgctccctccagccag C/T acattttctcctgtgagca	2368
ABCG1	18	intron1 + 6758	acctgcattggtgggtgccc C/G ctgccttctctactgcctt	2369
ABCG1	19	intron1 + 7029	tgggtcagattaaatata C/T tgaaggactaaacgtaaaa	2370
ABCG1	20	intron1 + 7176	ttgctcacatttgaaaaaa C/G gcaaaagatgggttttcag	2371
ABCG1	21	intron1 + 9243	gcctgagagcgtggcgagta G/A gagggttcggcagtgagac	2372
ABCG1	22	intron1 + 11224	tcgtgttagagaggaata G/A ggcagcatcattttgtacc	2373
ABCG1	23	intron1 + 11371	gggctctcttggagccctt I/G tctctccagccctgcgtct	2374
ABCG1	24	intron1 + 12420	gggatttcgaattctcaaac I/C ctgagctctgtgctttcccc	2375
ABCG1	25	intron1 + 12484	gagttgtctcctcaagagaa C/T tttgtatgttctctttctg	2376
ABCG1	26	intron1 + 12955	ctgggggttggaggagccac A/G gtctcacacattatggcagg	2377
ABCG1	27	intron1 + 12985	ctattggcaggtcgtgaaca I/C tttcttggatttgcaata	2378
ABCG1	28	intron1 + 20041	acatggccggttcccttct I/C cctcggaaatggcctggaatt	2379
ABCG1	29	intron1 + 20046	gccggtcttcccttcttct C/G gaattggcctggaattcgatc	2380
ABCG1	30	intron1 + 21058	acaagacttagaatttgacc G/A tgatttttaaatattctaa	2381
ABCG1	31	intron1 + 26189	tcttggatgtggccatgca C/T gggggcaagggtttgatgag	2382
ABCG1	32	intron1 + 27453	atcatgtgttttggggaaa G/C ctgggacccacttggata	2383
ABCG1	33	intron1 + 28098	caggaaaggagacgtgctg G/C tctgcttagagttaggcgc	2384
ABCG1	34	intron1 + 29670	ccttcagttgtaataggcag A/G aggaagccagagagagctg	2385
ABCG1	35	intron1 + 29810	attgtttctcctgtttgtt I/C tgtgttgcatttccctttaa	2386
ABCG1	36	intron1 + 36220	cagatcccttgggttctggg C/T aggtagtaggagaggttttt	2387
ABCG1	37	intron1 + 36341	aaacagggttgagtcctcc G/A taaggagacagagaccttcc	2388
ABCG1	38	intron1 + 36370	aggagaccttccacatctt G/A gcaagaattcttctttttc	2389
ABCG1	39	intron1 + 36662	cagactaaatgcacaattct C/A gattgagctgactgtattga	2390
ABCG1	40	intron1 + 36914	tgtaaagatggagagaac A/G cagtagtgccttgcgtgag	2391
ABCG1	41	intron1 + 37029	tgtgactcatggcctctgcc A/G ggggactgggtggccctgc	2392
ABCG1	42	intron4 + 1196	tgaaaagaaaatggatgagt G/A gaaacaaaagagagaaat	2393
ABCG1	43	intron4 + 1200	aagaaaatggatggatgaa A/C ccaaaagagagaaaatgtgg	2394
ABCG1	44	intron4 + 2041	aagcagaggcttttccacc G/A gagactcaagaagctgtcc	2395
ABCG1	45	intron4 + 2490	gtggtagagtagagctgagc A/T caggggggagccctccatcc	2396
ABCG1	46	intron4 + 2552	atggccttggggcactgcct G/A ctgtgccccgagccgagctt	2397
ABCG1	47	intron4 + 2822	cagcaggctcctgtgtag I/C cacagcaagccaggcccttg	2398
ABCG1	48	intron4 + 2850	agccaggcccttggcctgcc G/A gagctggaagaccagaaca	2399
ABCG1	49	intron4 + 2919	gcctccaggagtagctaca C/T gggaccogaaggcagatggc	2400
ABCG1	50	intron4 + 3506	ggcagcctgggtcgcagaga I/C cctccctggagcccccgcg	2401
ABCG1	51	intron4 + 3538	cgcccgccgggaagccccag G/A ggggctggagctacaagtgg	2402
ABCG1	52	intron4 + 3554	ccaggggggctggagctaca A/G gtggccttgcaggtttttt	2403
ABCG1	53	intron4 + 3721	ccagctcatgggcagggtg C/T gaggggaaaggcaccacag	2404
ABCG1	54	intron4 + 3852	caccagagccactcagctgg C/T caagagcgtgccccagttgt	2405
ABCG1	55	intron4 + 3921	gaagaccagcagtcagtc G/A gctgggaagaggctctgcc	2406
ABCG1	56	intron4 + 3979	accacacagccttttccaga C/T agccttccagaagctgtttc	2407
ABCG1	57	intron4 + 4291	gagcgcgtgagtaggttcc G/A ctgtcatggtctccagggg	2408
ABCG1	58	intron4 + 4922	gaaaccaccagaaattgtgc A/G tcttctcatgtgtccattca	2409
ABCG1	59	intron4 + 4968	tattgactggacaccttct C/T gtatggggcactgggctagg	2410
ABCG1	60	intron7 + 672	atcagtaacgggtcactaac G/A gatgctgctgagtgaggcag	2411
ABCG1	61	intron7 + 840	atttctatttctcaattgtcg I/C ctgaccagagagcggaggt	2412
ABCG1	62	intron7 + 891	tggccactgttggaggtgt G/A ggtgaccagagggccctgga	2413
ABCG1	63	intron7 + 997	tgtgtcctgtttgtggtt C/G atctaggaggtgtgtgtggcc	2414
ABCG1	64	intron9 + 1616	ctggaggagaagacaggata A/C agtctaagacgtgctgtac	2415
ABCG1	65	intron9 + 1630	aggataaagtctaagacgtg C/T tgtcacagagttcagggtcc	2416
ABCG1	66	intron9 + 1674	gcttccaaaggccgcatccg G/T gttgttctctgagccaggga	2417
ABCG1	67	intron9 + 1689	atccgggtgttctctgagc C/T gaggacggtttgcgaacgc	2418
ABCG1	68	intron10 + 446	tggctgacagtgaacacagc G/A gctgcttccagaacttta	2419
ABCG1	69	intron10 + 581	atgcagagtttcagaagagg C/G agactcaggaagagtaaggc	2420
ABCG1	70	intron13 + 243	accggagagccatggcagg A/C ccaagtgttctggacgttgc	2421
ABCG1	71	3' untranslated + 2370	gcctctcagctgagtgctgc A/G cagtcagatgtctgtggca	2422
ABCG1	72	3' flanking + 1124	ctcagaactacatcgagta G/A gtcagtgttgaacgccca	2423
ABCG1	73	3' flanking + 1252	atggggcccaagccctgcc I/C cagaagcagctttgtctcc	2424
ABCG1	74	3' flanking + 1433	gggggaagagcttgggaacc A/G tgagggtgttaggtgcaa	2425
ABCG1	75	3' flanking + 1513	tgaagggtgaactggagtag G/C tgaggattctcaggtgacg	2426

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ABCG1	76	intron1 + (19909-19944)	ccgatgaggaggggatggg (CACCAGGCAGCAGACTCTGA TGAGGAGGGAGGGGG) caccaggcagcagactctga	2427
ABCG1	77	intron1 + (19909-19944)	ccgatgaggaggggatggg ca	2428
ABCG1	78	intron1 + (25136-25137)	catgaacttgccctgaccata (G) ccctgtgaggagctagggt	2429
ABCG1	79	intron1 + (25136-25137)	catgaacttgccctgaccata ccctgtgaggagctagggt	2430
ABCG2	1	intron1 + 152	tcatttgaaagtgggtatgc G/A gtttaaaactgacagtcca	2431
ABCG2	2	intron1 + 614	agctagtcatataaataac G/A ccagagtagtaggaagaga	2432
ABCG2	3	intron1 + 10002	cctcatgaatggtatatacatg T/A cccaacatatctctttgat	2433
ABCG2	4	intron1 + 10123	acagtggtccctttgggtgc G/A tataccaaatccctgcata	2434
ABCG2	5	intron1 + 10768	ataggataattgagaacag G/A gtctgaagaactctgcagga	2435
ABCG2	6	intron1 + 10791	ctgaagaactctgcaggaata T/C gaaaatagttccctgctttt	2436
ABCG2	7	intron1 + 10792	tgaagaactctgcaggaata G/A aaaatagttccctgctttta	2437
ABCG2	8	intron1 + 14183	tcacttaaggctttgcagg G/G gtctaggacacagaagaga	2438
ABCG2	9	intron1 + 14934	aaagtgtcttttaaaatttc A/G tccttgagtcagtagctatt	2439
ABCG2	10	intron1 + 14955	tcttgagtcagtagctatt G/T aaattcaagcaataagttat	2440
ABCG2	11	intron1 + 17251	ctgtttgggaacagcaactc A/C atcataggcagagagaagt	2441
ABCG2	12	intron1 + 17347	atttcaaacctgttttcaaa G/A ttgttaagctcatottaagg	2442
ABCG2	13	intron1 + 17626	gaaggtgcatacaacttcc T/G acataaagcttgagctata	2443
ABCG2	14	intron1 + 18271	aaatgaagctgctcatttgc A/G cacatttataaaatggacttg	2444
ABCG2	15	intron1 + 18369	ctattgcttttctgtctgca G/T aaagataaaaactctccaga	2445
ABCG2	16	exon2 + 34	atgtcgaaagtttttatccca G/T gtgcacagaagaacaccaat	2446
ABCG2	17	intron2 + 36	tgtaaaaagacagcttttta A/G ttactctacagtgaaacctca	2447
ABCG2	18	intron2 + 4230	caaccctaattggaggccc C/T gggcgtggtgattgagaag	2448
ABCG2	19	intron2 + 4518	gttgacagacttttatagtg A/C gggacactgacctgcatacga	2449
ABCG2	20	intron2 + 6278	atgtatgtaccacgtcttcca T/C attcttaagagtagcccta	2450
ABCG2	21	intron3 + 10	ggcaaatcttctgtgagtata A/G gagagtataagtaagcgttt	2451
ABCG2	22	exon5 + 421	tgacggtgagagaanaactta C/A agttctcagcagctcttcgg	2452
ABCG2	23	intron6 + 3158	actattctagttgattctag A/G ttgtcaatacacacacactga	2453
ABCG2	24	intron6 + 3203	tcctattctgttttaataaa A/G gcaattgaatttaggtttgct	2454
ABCG2	25	intron6 + 3287	gtcaggctgaactagagcaa A/G caactctaaagcaagaatag	2455
ABCG2	26	intron7 + 179	ttcatttttagtagcaccagc T/C tttatttaggtatctttct	2456
ABCG2	27	intron9 + 5677	gcacttggactttgtttgc T/C acataactgtcattgtctgc	2457
ABCG2	28	intron9 + 5974	tatactaataaattggtgt A/T taagtttttatctctaattg	2458
ABCG2	29	intron10 + 1908	gaagcttatgtgacagctat G/T ttgagtctggaaaggctga	2459
ABCG2	30	intron10 + 2094	ccctgagggtgaggtatct G/A gattatttccagacttgcta	2460
ABCG2	31	intron11 + 20	tgtgagtaggtctttgtttc A/G ggaacggggtgtccagcag	2461
ABCG2	32	intron11 + 1447	tgttcttcaaggaaagccccc C/T gtcaagaagaaagaaagc	2462
ABCG2	33	intron12 + 49	atgtcttttagcttgcctat G/T ggtgaagtcagttgcacctt	2463
ABCG2	34	intron12 + 1566	tatgcagttacatggacaga C/T acaacattggagaccgaggg	2464
ABCG2	35	intron13 + 40	gctctgataaaggaattgtt C/T ttctcttcaatttcttctgc	2465
ABCG2	36	intron13 + 1823	ttactcaagcaggcctgact C/T ttagtatttgcctttttag	2466
ABCG2	37	intron14 + 497	ctaataaaaacaacaagaa T/C gaagattgtcactgttaaat	2467
ABCG2	38	intron14 + 815	taactctttggaacttctt A/G aaatttaaaactgtttacct	2468
ABCG2	39	intron15 + 110	ccaggggcactgaatttttc C/T gagcctaagcttttctcatcc	2469
ABCG2	40	intron15 + 566	gccctagatcatgtgtgt T/A gtttttaaaacttaactggaa	2470
ABCG2	41	intron15 + 639	aaacaagaacacttgaataa G/A ttgagaaaaaaccccgctttt	2471
ABCG2	42	intron15 + 1197	tgagttagctgggattacagg C/T gccaccaccacacactggct	2472
ABCG2	43	intron16 + 520	catcaattcaggccaagaaa T/C agaagattgtagcacacaaa	2473
ABCG2	44	5' flanking - (998-995)	gttggatggctacactcac TCAG/Δ aaagcctgatggcccgcttc	2474
ABCG2	45	intron13 + 405	ctgtagtttttttttttt T/Δ aacatttttaatttatgttt	2475
ABCG2	46	intron13 + (692-702)	tcaatatgtttctgcttacc (T)9-11 aatggttacttaactcta	2476
ABCG2	47	intron15 + (645-650)	aaacacttgaataagtttag (A)7-8 ccccgctttcacataatgtt	2477
ABCG4	1	intron1 + 84	ggcctgggtgtcccatgttc G/A gaaagtcctgcaccagtggg	2478
ABCG4	2	intron2 + 77	gaacacagaaggtattctga A/G agggcattgaccccatctt	2479
ABCG4	3	exon6 + 679	tgtgtccctcatgaagttcc C/T tggcacagggggccgtacc	2480
ABCG4	4	intron7 + 95	ggcctcctaggggtagagat C/T tcacccgtgcctgccttccc	2481
ABCG4	5	intron7 + 158	cttgccttgggaagttagt G/A tgaatctaaactgagcttc	2482
ABCG4	6	intron8 + 106	ccccagggcattgcaacca A/G tgggtgctaggaagaacctta	2483
ABCG4	7	intron8 + 1089	aggtacacaacttaattgta C/G aagattctctgtagacctgg	2484
ABCG4	8	intron11 + 1113	acgtgagacagataaagta T/C ggtcatatggccaggaggga	2485
ABCG4	9	intron11 + 1120	acgagataaagttaggtcat A/G tggccaggagggaaggagac	2486
ABCG4	10	intron11 + 1173	gggggacagcttgaacaaga A/G tgtggaggcaggatggacac	2487
ABCG4	11	3' untranslated + 2758	gagtgacaggcacatacatg A/C gaacaggccatctcagccct	2488
ABCE1	1	5' flanking - 158	aactcagattctcggcaccct C/T cagcagctggcttcgccaac	2489
ABCE1	2	intron9 + 237	ctgaatttatatgcaaatc C/T gtactttataggaagcaga	2490
ABCE1	3	intron9 + 4203	ttgtgtaggaaagctgataca T/G taatttgacatatgagatgt	2491
ABCE1	4	intron10 + 1811	ccaagaaacttcagctttct C/T ttcaacttaaatataggaaac	2492
ABCE1	5	intron17 + 2301	ataccagaacacagatgta T/C gtcagaaacaggtttgacag	2493
ABCE1	6	3' untranslated + 1810	tggatgattagactgactct G/C agaattatgataagccattt	2494
ABCE1	7	intron1 + (5349-5363)	tttctctgggttgggtgggg (T)13-16 gagactgggtctgactctca	2495
ABCE1	8	intron1 + (5845-5854)	tacattttgcaaaattata (T)9-10 gcagataatcatattcatctc	2496
ABCE1	9	intron5 + (836-851)	taaatccaatgattctgta (T)14-16 aggatcctcctgactggcag	2497
ABCE1	10	intron8 + (1153-1169)	tctttcaaaccttatatttc (T)13-17 catagtttcatgtttgaiga	2498
ABCE1	11	intron9 + (1023-1024)	ttgctctgttttcaattctt (T) atccatggggcagcagctcg	2499
ABCE1	11	intron9 + (1023-1024)	ttgctctgttttcaattctt atccatggggcagcagctcg	2500
ABCE1	12	intron9 + (2338-2346)	agtgtagatggactcgggg (A)8-9 ctagttaaggaaaagtaata	2501
ABCE1	13	intron9 + (3213-3221)	ttccaattttccattgttac (T)8-9 ctgcccagattactcctgaa	2502
ABCE1	14	intron10 + (284-299)	tcctctgcattttgctctt GCAGTATTACTGTAGT/Δ atttg	2503
ABCE1	15	intron10 + (840-853)	tcattttcaaatata	2504
ABCE1	16	intron16 + (1163-1172)	ttttttgtttttttttttt (T)13-14 aatcttggaggaaatctttt	2505
ABCE1	17	intron16 + (1372-1382)	gattagaaatccaggtttaa (T)9-10 gttttgcacaaaaattac	2506
ABCE1	17	intron16 + (1372-1382)	taaaatttaatacaaaattga (T)10-11 ctcttagtcttcaaacctt	2507
CHST1	1	intron1 + 2475	taaatggagaaataacacc G/A accgatagcattgtttgta	2507
CHST1	2	intron1 + 2612	aaactcccaagcatgctca C/A ctgatccttaccctaggte	2508
CHST1	3	intron1 + 3900	gccctgcccccactcccaga C/G ttgcggccctccagccctt	2509
CHST1	4	intron1 + 6520	cctccccagaggagctggg C/T aactggggccttgtttgt	2510



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
CHST1	5	intron1 + 7534	atttgtgtgtggcatactgc T/C cacatggaaggatgctctag	2511
CHST1	6	intron1 + 7911	ttttcccttaggaagaaataac G/A ccttgctgttttatgcattt	2512
CHST1	7	intron1 + 7963	aaaacattcatgggggatta G/C tgcgtgctacgtcagatga	2513
CHST1	8	intron1 + 9173	gcgtgccacagatcaggccc G/A aggtgggggacagaaatgcc	2514
CHST1	9	intron1 + 9701	cccagaattctgaatacagc A/G gcgatgacgggactacgggg	2515
CHST1	10	intron1 + 12132	aacagatccacaggaccaga C/A agcaaaaggggaggaactgc	2516
CHST1	11	intron1 + 12465	atgcaggggaaggggcttggc G/A caaaactgtcaactgagata	2517
CHST1	12	intron1 + 12561	atgctccctgttccactttc G/A ctttgagtttcaggtagctg	2518
CHST1	13	intron3 + 529	ccatggtctgcaggggtcct T/G catgctcaggggattgggt	2519
CHST1	14	intron3 + 617	agaggacagaggaagaggga C/A cactggagaaactggcgcc	2520
CHST1	15	intron3 + 796	aagaggcttccgcagctgtc C/T gcaggttaaatcctgggggtg	2521
CHST1	16	intron3 + 818	caggttaaatcctgggggtg A/G aggaatgtttgttcagctcc	2522
CHST1	17	3' flanking + 762	ataactggtacaggtttact G/C gtgtctacactggcagagaa	2523
CHST1	18	intron1 + 7874	gttttcccttgccttgcct T/Δ cattttcatcactcatttt	2524
CHST1	19	3' flanking + (335-349)	cacactgccacactggcta (T)12-15 ggaatttagtagagacgggg	2525
CHST3	1	5' untranslated - 294	tccagctgccacgccc G/C gcagcgccctccatccctccg	2526
CHST3	2	intron1 + 96	gcgtccagggcgccgccc G/A actttggaggagagagggg	2527
CHST3	3	intron1 + 4467	agagaagaatggggcagagc G/C ggagcagccagggaggtga	2528
CHST3	4	intron1 + 4853	ggatgagcactgccagctg A/G tccctgccacacttccacag	2529
CHST3	5	intron1 + 4965	tccactgcagaggggacaca G/C tgaccagagcgggaagtggg	2530
CHST3	6	intron1 + 5046	gggctgtccattttgtacc C/T ctggttccatccagtgctt	2531
CHST3	7	intron1 + 5300	ccctttcttcttaaggcct A/G aagagatgacagaaatgtgc	2532
CHST3	8	intron1 + 5354	agcgcgttgactccacagcg G/A ggtgtgggtggccctggc	2533
CHST3	9	intron1 + 5428	gacacgcttcagccctgtg C/G tctattgccccaaatctggc	2534
CHST3	10	intron1 + 5621	ctgtgcttccctggggccct A/G ggaattttatcactgaggtt	2535
CHST3	11	intron1 + 6555	gagtgaggcactgctggaag G/C ttctgttccgtgtttgttc	2536
CHST3	12	intron1 + 6990	aaacacactggggccacccccc G/A tcccgcactgtgactacac	2537
CHST3	13	intron1 + 7133	ctgagggcctgtcctgcagg T/G ttgatgtgtctgaagggcc	2538
CHST3	14	intron1 + 7161	gtctgaagggcccccagaa T/C agaaatctagaacctgccag	2539
CHST3	15	intron1 + 7199	cagtcacgaagcagtgctac C/T caccagaggatgaagaactg	2540
CHST3	16	intron1 + 7316	cttgcatctgtgttaggtgc C/T tggggtagcgtgccaggga	2541
CHST3	17	intron1 + 7967	gacaggaaccccccagcg T/G gatgtctggccctgtgacct	2542
CHST3	18	intron1 + 11412	gcttgcaacttctgattcatt C/T tgcagtcactggctctttgt	2543
CHST3	19	intron1 + 11591	ccctggagggccctcactgc G/A gtgactcattaccagcatg	2544
CHST3	20	intron1 + 12541	accacacagcatgaatggg G/C ccagccccagcctgccgct	2545
CHST3	21	intron1 + 12672	gtagccacagctggggctgt G/C gggtcaggcatggcaaggg	2546
CHST3	22	intron1 + 14809	ggatgtgtagggtttgggct C/T ggccttaaggatgggtgga	2547
CHST3	23	intron1 + 16161	gatgtcgttcaggcatttgc G/A ttggatctttaaccacacc	2548
CHST3	24	intron1 + 16385	tatttagcatgtgggttca A/C ctttctgtttttcaagggg	2549
CHST3	25	intron1 + 33638	gacttggggccacgtccttgg G/C catgaactctgttctatgtc	2550
CHST3	26	intron1 + 33878	agcaagaagtgtgtcccc C/T acagccccactcaggcataa	2551
CHST3	27	intron1 + 34690	agcacacatggagctttccc G/A cagtggtttcagcgtcccc	2552
CHST3	28	intron1 + 35145	agggagcccgagccctcact T/C gctggggcttgcctggcctc	2553
CHST3	29	intron1 + 35340	tgtgaagtgttggccacagt T/C ggtggccatggttgcacccg	2554
CHST3	30	intron1 + 35436	gccactcatgtatggagcaa T/C tgcctttttttcttctctt	2555
CHST3	31	intron1 + 36150	ccatagaagaagctggggcct G/T aggaagccaggggaagcagga	2556
CHST3	32	intron1 + 36194	gggtgtggggaggccagcagg G/A gtgtggccctcagcggggag	2557
CHST3	33	intron1 + 36561	ctctgtgtttgtgttcaat A/G tgcagagtgtgtgacaaac	2558
CHST3	34	intron1 + 37602	ctggaacagcaacttaaaaa A/T agaaatagtccctggaaagg	2559
CHST3	35	intron1 + 37725	gggtagccaggggcagctccc C/T gaccgcacactgcctttt	2560
CHST3	36	intron1 + 37734	gcagctccccagcccgca C/G ctgccttttccacccctccc	2561
CHST3	37	intron1 + 38208	gccattctagatgcagttcc C/T gactttgggtgtgttga	2562
CHST3	38	intron1 + 38219	cgagtcgccactttgggg T/C gcttgcattctggaaggga	2563
CHST3	39	intron2 + 255	ctacagctgtgaagggttag A/G caagatacttaacatttctg	2564
CHST3	40	3' untranslated + 2202	acacctcagaggagcctgtg C/A ttaacattttgaggattatt	2565
CHST3	41	3' untranslated + 2569	aggcctcatctgggttgggg G/C caagaggaagatcacagagt	2566
CHST3	42	3' untranslated + 2717	ctggaatttccctcttagggc C/T ctgggaagagtattgcttaa	2567
CHST3	43	3' untranslated + 2753	cttaacgcagagatgtctgg G/A tgttttgtttcggcctttta	2568
CHST3	44	3' untranslated + 2800	gcttgggtgtctttctgttt C/T atggctgtgtttttgctttt	2569
CHST3	45	3' untranslated + 3283	ccgagggctggccagctctg C/T ttctgttttctggacaatt	2570
CHST3	46	3' untranslated + 3327	ctgtcagatcagccctattg T/C aaaccagagggctgcattt	2571
CHST3	47	3' untranslated + 3787	gttcccatgtgagggtcgg A/G ggggctgggactggggagg	2572
CHST3	48	3' untranslated + 3860	ggccctgtcaatgtggacag T/C agactttatccctctctt	2573
CHST3	49	3' untranslated + 4915	ccagatgtgcataagaagcca G/A tctctgtcacatacccgca	2574
CHST3	50	3' untranslated + 4993	taaaagcaaataggctttt G/A tcttctgcataatgcac	2575
CHST3	51	3' untranslated + 5223	ggaaggagcttcagcaggag G/A tcttcccagaaggttgatt	2576
CHST3	52	3' untranslated + 5370	tcatacctgtaatcccagca C/T ttggggaggccaaggtggga	2577
CHST3	53	3' untranslated + 5545	ccattcccagaagtcagaaag T/C gaagccagatccaagggt	2578
CHST3	54	3' untranslated + 5859	caaaagcacaagcagaatt G/C gcaacttcaattgttca	2579
CHST3	55	3' untranslated + 5870	cagaattggcaacttcc T/A tgtctcaagagctccaagat	2580
CHST3	56	3' untranslated + 5971	ttccaaggctacagactgg C/T gccatcttcacagccctagc	2581
CHST3	57	3' untranslated + 6208	atttcatgtctgcatgttac G/A agacaccccttcacggca	2582
CHST3	58	3' untranslated + 6223	tacgagacaccccttcc G/A gcatacactgcattggtatg	2583
CHST3	59	3' flanking + 281	agacaggagtgttggccag C/T ggtcagggggcctggggatg	2584
CHST3	60	3' flanking + 997	acctttaaagtatttggc C/T ggtcctgtcatcccaacct	2585
CHST3	61	intron1 + 22595	cgggagcaggaagaaaaaaa A/Δ gaataagaagaaaggagct	2586
CHST3	62	intron1 + (35423-35424)	gctcatgtcacagcactc AT/Δ gatgtgagcaattgctttt	2587
NDUFV1	1	intron3 + 670	ctgggtggagtgggtggca T/C ggagttgaagaccagctcct	2588
NDUFV1	2	intron6 + 160	tgtggccgccccagccctga C/G catgcatccctttggggacc	2589
NDUFV1	3	intron9 + 27	accaccccttgcgttagcac G/A gagggtgggttggcatcaagg	2590
NDUFV1	4	3' flanking + 1111	ttagtgctgaggtcagcccc A/C atccagtcacaagccaccc	2591
NDUFV1	5	3' flanking + 1658	gaatgcggaagtgtctgtg G/A gcacccaccatgtccgggc	2592
NDUFV1	6	3' flanking + 1713	gatctggggcggaggtata C/T ggggctggcgtgggtgaag	2593
NDUFV1	7	intron4 + 214	tgtgttaatttttttttt T/Δ gcttcaaaaatagatttt	2594
NDUFV1	8	3' flanking + (772-774)	tgaactcgggtttcagggtc T/C/Δ ctgtgaacactgtttttaa	2595
NDUFV2	1	intron1 + 526	ggaaatgctggctaaataaa C/T ggttcaaaactaactctgaa	2596
NDUFV2	2	intron1 + 6689	tcttggatgtagtattgt T/G tgaacacagaagaattca	2597

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
NDUFV2	3	intron1 + 14767	ccaaatgcattgccagcagag C/T gtggcaggaaggtacacaag	2598
NDUFV2	4	exon2 + 86	aaggaatttgataagacag T/C tatgcaaaatggagctggag	2599
NDUFV2	5	intron2 - 29	cagaagatcttactctctaa T/G gaagctggataaacattttt	2600
NDUFV2	6	intron2 - 168	tttactttgttaatacact T/C atcaaatgtgttttagaca	2601
NDUFV2	7	intron4 + 677	aaaccacatactatttgatt C/A tgatgagaatcacatacca	2602
NDUFV2	8	intron4 + 2295	tatgattcaacttttcaaaag A/T gtattgtgatatgaaataga	2603
NDUFV2	9	intron5 + 102	caactttcgccattcttttg G/A atctgtacttacctagtaat	2604
NDUFV2	10	intron7 + 5466	tggttaagaggctttaagata A/C caaatgctcagctttcaggga	2605
NDUFV2	11	intron1 + (13562-13563)	tactotttaaataatcctt (C/T) ttattataagtatacagctc	2606
NDUFV2	11	intron1 + (13562-13563)	tactotttaaataatcctt ttattataagtatacagctc	2607
NDUFV3	1	5' flanking - 606	aattacgactaacgttgggg A/G cgaactctttgtctaaataaa	2608
NDUFV3	2	5' flanking - 222	cgccgcgccccgccacagc G/A cccaggcgccccgaggccac	2609
NDUFV3	3	5' flanking - 111	tgcccccagggaggcactt A/G gcctactggggatgcccgc	2610
NDUFV3	4	intron1 + 137	ttggcgctgacccgcctc C/T ctggcccgagactgaccgc	2611
NDUFV3	5	intron2 + 152	tatacaagacacaagatcta T/C aacagatttagaccaaaaca	2612
NDUFV3	6	intron2 + 6304	ttcacagatgaaggggttcc G/A aaattttgtcagaagaagac	2613
NDUFV3	7	intron2 + 6433	tcgcttctgtcttctatcct G/T tccagctcctctgattctga	2614
NDUFV3	8	intron2 + 6563	ccctttgaaaacagagccccc C/T gattacagatcacgaaaa	2615
NDUFV3	9	intron2 + 9619	actatctctgtgcgcatgc G/A cagagccacacttgcagagc	2616
NDUFV3	10	intron2 + 9858	aggatgccagctcttttaaat G/A agacatcgtttttgcttaac	2617
NDUFV3	11	intron2 + 11673	cttgtagtagtaagcgcctt A/G tctgagccaaagtcattcata	2618
NDUFA10	1	5' flanking - 1734	tgcaaccttgaactgtttact T/C tccgttaaccattaccctt	2619
NDUFA10	2	5' flanking - 1492	aaaacatccacgcaaacagg T/C tctgagaagttactctgcg	2620
NDUFA10	3	intron3 + 370	aagactgtgcattgcccag C/A agacagagatgtgagtgcca	2621
NDUFA10	4	intron3 + 2485	ttgtattttttttttctct G/A aatgcagtgatcagttgaca	2622
NDUFA10	5	intron4 + 236	ctgtgaagcagattggagc C/T ctggacctcaaacacagca	2623
NDUFA10	6	intron4 + 1742	tgctggcatctgctgagtg G/T tgctgaagcttgaggactgg	2624
NDUFA10	7	intron4 + 2090	ggctgggggaaagcagatca T/C gtggctaaaggacaggtgg	2625
NDUFA10	8	intron4 + 3054	cagctgattatactactgaa A/C cgggataaagtcagcttgat	2626
NDUFA10	9	intron4 + 3066	ctactgaacgggataaaatg C/T agcttgatgattttcagctg	2627
NDUFA10	10	intron4 + 3377	gtcacagtttaaatgctgct G/A ttttactctgtgtaagtagc	2628
NDUFA10	11	intron5 + 46	aagcatctctattttgaatg T/C agatcagcactaaagccct	2629
NDUFA10	12	intron8 + 1465	gcaacgcccagtttccgtga C/T aggcctcatatccagcgtgc	2630
NDUFA10	13	intron8 + 1809	cctggaggcacaaggatggc C/A ggggcaactaaacttccctc	2631
NDUFA10	14	intron8 + 11226	gttggtgactgtgtggggc A/G tctcacctctcgggctgcag	2632
NDUFA10	15	intron8 + 11319	atcttgcttccctccctgcc G/A tctgttcaggcttgaaacct	2633
NDUFA10	16	intron8 + 11386	ccataactctagcttggaacc C/T tcccttttccctcgtgacc	2634
NDUFA10	17	intron8 + 12301	acataattattgtaaacatg C/T cgtttaccagtgcattcat	2635
NDUFA10	18	intron8 + 13361	ccaggccactgattgcttc G/A cattttctagcatttttcta	2636
NDUFA10	19	intron9 + 183	tttctgtgtggaagctgat G/A aagtcctcagatgacagccc	2637
NDUFA10	20	intron9 + 6669	aataaataagcattttctg G/T aaattcatagaatttctttt	2638
NDUFA10	21	intron9 + 8028	gaggacattccacagagcgt G/A tgactattagagcagaaggt	2639
NDUFA10	22	intron9 + 10742	ctggaggagaggggtggagc C/G agttcagccagcactgggt	2640
NDUFA10	23	intron9 + 10985	agaaagggttacacaggagc A/G caactctcaggagtggtgt	2641
NDUFA10	24	intron9 + 10989	agggttacacaggagcacac T/C tctcaggagtggtgtgacg	2642
NDUFA10	25	intron9 + 12601	ctgtgaatcctctcactcgc G/A tgaaggccctggctgcctct	2643
NDUFA10	26	intron9 + 13908	caacattgtatgtaaccaag C/T ctggaattgcagtgtaaga	2644
NDUFA10	27	intron9 + 13911	attgttatgtaaccaagcct G/T gaattgcagtgtaagaact	2645
NDUFA10	28	intron9 + 14064	tcttgactattagaaccctt A/G tcagataaaattttaaacag	2646
NDUFA10	29	intron9 + 14184	tgccctttggtgggaacagc G/A agagatacagaaccgacggt	2647
NDUFA10	30	intron9 + 16487	cttgaagctgatgcttccct C/A cttgaagctgatgcttccct	2648
NDUFA10	31	intron9 + 16779	gccagacgtgactgcttttag G/A ttccctatgacattcagacc	2649
NDUFA10	32	intron9 + 17663	ttccaaatcacccagagact T/G tgcagttatttgaagctcct	2650
NDUFA10	33	5' flanking - (1668-1659)	gtaaaaattgttttaactc (C) 9-11 ttccataaaccaggtataaa	2651
NDUFA10	34	5' flanking - (1355-1334)	ctgtatccatttgaaggccac (A) 15-21 tgcaagggaacaaaggcaaa	2652
NDUFA10	35	intron1 + (46-61)	tgccgggggtggcagggtggc GGGGTGGCGGGGTGGG/ $\Delta$ gag	2653
NDUFA10	36	intron4 + 2486	cagttccacatctcccc	2654
NDUFA10	37	intron7 + (1600-1601)	ctcactggaactttttttt T/ $\Delta$ aatttaatttttaaaatttt	2655
NDUFA10	37	intron7 + (1600-1601)	caacttccattctgactgtta (A) cgtgtgattcttctcgcca	2656
NDUFA10	38	intron9 + 1054	caacttccattctgactgtta cgtgtgattcttctcgcca	2657
NDUFA10	39	intron9 + (8161-8172)	gcgcgtgctgtttctccct A/ $\Delta$ tctgtcctgttacacgtgtg	2658
NDUFA10	40	intron9 + (8646-8647)	tttctcgttttctgggagac (T) 10-12 aatgttgaaatatgtgttt	2659
NDUFA10	40	intron9 + (8646-8647)	aattccccattgcttctct (T) ctgtagacattttaaaccta	2660
NDUFA10	41	intron9 + (16503-16523)	aattccccattgcttctct ctgtagacattttaaaccta	2661
NDUFA10	42	intron9 + (17905-17936)	ccctccttgaagctgatgt TCCCTGCTTG	2662
MGST1	37	5' flanking - 1376	AAGCTGATCGT/ $\Delta$ gtccaagatagttgctagga	2663
MGST1	38	intron1A + 147	caaatatagtatacatgta (CA) 12-18 tccctcatgaaaactctttc	2664
MGST1	39	intron1B + 36	ttataaatgtttattcaat T/G aaaccaactgctaattttct	2665
MGST1	40	intron1C + 456	cctggagattttaactttct G/A cgaagtttttaaaacaact	2666
MGST1	41	intron1C + 719	ggagaaggggacgcacatga A/G aggggtggcaggcaggaggg	2667
MGST1	42	intron1C + 985	cccttgggacggtttctc C/T tgtgcccacttcccagtc	2668
MGST1	43	intron2 + 3083	gcccgaagcattgctgtat A/G gcaccaggccctccagtgg	2669
MGST1	44	intron2 + 3106	cgagtaaaattttctaccc C/G tttgttttagagtggtgtc	2670
MGST1	45	intron3 + 1703	aaaaattttagatatggg T/G actccctatgttgcacagc	2671
MGST1	46	intron3 + 2557	tcctatgttggccagcgt A/G tcttgaaattctgggctcaa	2672
MGST1	47	intron3 + 3032	ttctcttctaagaagaagtc T/C gtgcagatacttagcacaaa	2673
MGST1	48	intron3 + 3045	tccagcatcttccctttcca T/C ttttaagttagactttttt	2674
MGST1	49	intron3 + 3289	agagacatttagaataatatt C/A cctttaaaggtagagaataa	2675
MGST1	50	intron3 + 3885	atatattccctttaaaggta G/C agaataaacccttcactgaga	2676
MGST1	51	intron3 + 3976	ggtttatagtttccccc T/A ccccgcccccacaaagaccca	2677
MGST1	52	intron3 + 4298	gaagctgcgcgtccaggaag G/C agtctgtcttgaggagaag	2678
MGST1	53	intron3 + 4519	ggaaagctgggggaactgttt G/T cctggacagagcttcaaaa	2679
MGST1	54	3' untranslated + 603	tgtcaactcgttaacacagg C/T gtagaagtgacattgtttt	2680
MGST1	55	3' flanking + 147	tttaatagaaaattgttatc C/T tctcttttcttctccatctc	2681
MGST1	56	3' flanking + 237	gggttaaacccattttgaata T/C tagcattggccaatatctgt	2682

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
MGST1	57	3' flanking + 1318	tggtctgtgtgcatgaaca T/C gcacgcgtgcacgcacac	2683
MGST1	58	3' flanking + 1331	atgaacatgcacgcgtgcac G/A cgcacacacacacacaca	2684
MGST1	59	intron1C + (904-923)	tgcgattatcttggtaatt (A) 18-20 ggcaaatcagtcacaaatttg	2685
MGST1	60	intron1C + (3433-3434)	cccttcaataactagaacaa (AA) gcagacacattaaatgttac	2686
MGST1	61	intron1C + (3433-3434)	cccttcaataactagaacaa gcagacacattaaatgttac	2687
MGST1	62	intron1C + 5146	actatttcaattttttttt T/Δ ggaagggagagacagagtcctc	2688
MGST1	63	intron2 + (552-563)	ccagcattataagaatgac (T) 9-13 aagtcagagatggggaggg	2689
MGST1	64	exon3 + (172-173)	tagcatttggcaaggagaa AA/Δ tgccaagaagtatcttcgaa	2690
MGST1	65	intron3 + (152-158)	agaaaactggatgtctgaaa TTGACA/GTCCAATAT cactg	2691
MGST1	66	intron3 + (2198-2200)	cactgtatgtgttg	2692
MGST1	67	intron3 + (2571-2580)	ggattttagattccctccca CTA/Δ ttctttccgaccttccacc	2693
MGST1	68	intron3 + (4682-4683)	ttccatttttaagttagac (T) 9-10 caccctctctgttacttcag	2694
MGST1	69	intron3 + (4682-4683)	ttctttcattgtctctatgt (GAGATGTTG	2695
MGST1	70	3' flank + (1359-1360)	TGGCTCACAT) agtcacctctttgtgagac	2696
MGST1	71	3' flank + (1889-1891)	ttctttcattgtctctatgt agtcacctctttgtgagac	2697
HMGI7L1	1	3' untranslated + 864	acacacacacacacacac CC/Δ tgctctggagttgggaact	2698
UGT2A1	1	5' flanking - 1602	ttagaatagtttttaactat ACT/Δ ttacttcccaagagaagctt	2699
UGT2A1	2	5' flanking - 1480	ctttctgatttttgatgtc G/C gttgaagaaggagttttaa	2700
UGT2A1	3	5' flanking - 1406	ataacatctctgcagagaa A/C cttcaatggaataacactca	2701
UGT2A1	4	5' flanking - 1388	tacagattatcttttgat G/C ggaagccttagaagagacat	2702
UGT2A1	5	5' flanking - 935	attcagaagatttttaac A/T gaaaaggatcactctgctt	2703
UGT2A1	6	5' flanking - 287	acatgaagaggatcactctg C/T ttattcacagacatgtcat	2704
UGT2A1	7	5' flanking - 128	aaattattcaactcttttg G/A cagtgtttctttttctttg	2705
UGT2A1	8	intron1 + 535	cctgaatgtaggttgagat G/A tacagaagctttatccaatt	2706
UGT2A1	9	intron1 + 642	gagaagtgaagacacattacc C/T ataaatctgtaaatcccta	2707
UGT2A1	10	intron1 + 1221	cattgatcaggggtatttat C/T catgctaaagctttatatt	2708
UGT2A1	11	intron1 + 1448	tattattgatcatgttgatc A/C ttatatacacaattttgtcta	2709
UGT2A1	12	intron1 + 2000	tttaatactaaatgaact C/G aggcacatcaaaagggaat	2710
UGT2A1	13	intron1 + 3118	aggtcctacagggcaacatc C/T acatagcagctctgtgctgg	2711
UGT2A1	14	intron1 + 3191	gacacattagcttcttttt A/G cagatctctgttctaaaca	2712
UGT2A1	15	intron1 + 3770	cttaaaattcttttaagaa T/G cattgcaacaaatttatatc	2713
UGT2A1	16	intron1 + 4584	ataaataagacaactcccta A/T gttactctctgcagtgga	2714
UGT2A1	17	intron1 + 4854	atcaccagataatttactat C/T cattaaggagtaggtcatca	2715
UGT2A1	18	intron1 - 19146	tgattgttagaattcttga A/C aaatctcttagtatcatcc	2716
UGT2A1	19	intron1 - 18346	tactctgtcatgttgaata G/C cctatcactgtgtgtctgcc	2717
UGT2A1	20	intron1 - 18218	ctgttttaattctcaatcaa C/T ggccacatggttaaaataaa	2718
UGT2A1	21	intron1 - 17937	atggcaatatttttagaatt G/A ttaactccaataatgaata	2719
UGT2A1	22	intron1 - 12585	tatatcattatttttaacta T/G agatagcactagccctaatt	2720
UGT2A1	23	intron1 - 11430	ctcctaataatttggaacta C/T cataactattcagcactatc	2721
UGT2A1	24	intron1 - 10761	ttccacacagggacaagta A/G cagaagaaattttctgtct	2722
UGT2A1	25	intron1 - 381	acaaagggtttattttctta C/G agttctgtggttagagctc	2723
UGT2A1	26	intron1 - 329	tttaaaatagcagctgtatt T/G ccacttttaaaactatac	2724
UGT2A1	27	intron1 - 41	aaatctctctctctctctc C/T ttccacagggcccaactctac	2725
UGT2A1	28	intron2 + 263	ttccctttctctctctctc A/G tctctctctctctctctctc	2726
UGT2A1	29	intron2 + 454	ttctctctcagcaaacata T/A aagctaatttctctcactca	2727
UGT2A1	30	intron2 + 554	ccacttgatactggacttgg T/C gggacagaaacagatcat	2728
UGT2A1	31	intron2 + 1113	agaaagccattgaataaag G/C cagggttttttaggtttta	2729
UGT2A1	32	intron2 + 1304	aaaaacttttttgatgtac A/T atgttgatgttagttttctga	2730
UGT2A1	33	intron2 + 1305	ctgcaggcaagctctagtga A/T tgtttattataggaaataat	2731
UGT2A1	34	intron2 + 1367	gacaaatcagccatgtttta C/T aatagcagacattatgccat	2732
UGT2A1	35	intron2 + 2074	acaaatcagccatgtttta A/G atagcagacattatgccat	2733
UGT2A1	36	intron2 + 2164	atcgataggtgtttgggaa A/C tatgaataccaacatgggt	2734
UGT2A1	37	intron2 + 2298	aaattttttcttagaactat G/T aatcaaggagggatcacagt	2735
UGT2A1	38	intron2 + 2346	attttattagataactcgg A/C atgctaacaattttaaagc	2736
UGT2A1	39	exon3 + 922	taacaatttcagttagcat G/C gaagagtgtgctctatttta	2737
UGT2A1	40	intron3 - 217	ttctgttaattgttttctt T/C catgcttggactgttaatca	2738
UGT2A1	41	intron3 - 194	gtgttggtgtttttctct G/A gatcaatgggtcaaaaacctt	2739
UGT2A1	42	exon5 + 1171	aagcttagaagtgataata T/C caaaacataataactatact	2740
UGT2A1	43	intron5 + 1546	aaacaataataactactcgg G/A tagactatttagtaagact	2741
UGT2A1	44	intron5 + 1547	acggagtcctctatgggtgga G/A ttcccatgtttgctgatcag	2742
UGT2A1	45	intron5 + 2013	tttttaaaattcagaaactc A/G gttatgggtattcttataaa	2743
UGT2A1	46	intron5 + 2318	tttttaaaattcagaaactc A/G ttatgggtattcttataaa	2744
UGT2A1	47	intron5 + 2505	atcatattcattaccctccc G/T ctattattgtattttgaatc	2745
UGT2A1	48	intron5 + 2639	aaatttagtctttttctta C/T ggaagtaacctgttaaaaa	2746
UGT2A1	49	intron5 + 4009	taattgacttttatttaaac G/A tacatgttgtataagtcata	2747
UGT2A1	50	intron5 + 4311	tagactattacaaagtgtt A/G gttgctgacaattttgttca	2748
UGT2A1	51	intron5 + 4545	gaatccaggtcgggaactttt C/A ttccagacacaaacaaaat	2749
UGT2A1	52	intron5 + 4616	atacagacactgtccttttc G/A tcacaaacatacagatgtgt	2750
UGT2A1	53	intron5 + 4717	agctcacacagatataaaat T/C atttttgaaaaattatgct	2751
UGT2A1	54	exon6 + 1524	actttttatgtctacattt G/C atcatactgtgttaagcata	2752
UGT2A1	55	3' untranslated + 1683	tgcaagaatttatattttctc C/A acgtaactatggccttaaac	2753
UGT2A1	56	3' flanking + 685	gctatattttttggtcataca G/A tttgtttttttttctgtca	2754
UGT2A1	57	intron1 - (18967-18965)	aagggttttaacaaaaaac G/A tctccatcctgtttccaaa	2755
UGT2A1	58	intron1 - (18862-18803)	aatctagaataaattatca T/C ttttataaaatttttagtca	2756
UGT2A1	59	intron1 - (17463-17447)	ctcccaattagattgattag TAT/Δ gatttcctgggttactggt	2757
UGT2A1	60	intron1 - 10860	aatcattcttcccccttca (AC) 14-17 atgcttactggcctatttat	2758
UGT2A1	61	intron2 + (528-538)	aaacttagaaacctctattc (A) 16-27 gtaagaaatggcagagaa	2759
UGT2A1	62	intron2 + (1514-1533)	attcaatgcaacttttttt T/Δ gtaatggcagaattagaaca	2760
UGT2A1	63	intron5 + (916-917)	ctgttaggaacaattggtt (A) 8-10 cttttttgagttgacaatgg	2761
UGT2A1	64	intron5 + 1163	ttgtgtgtatgtatgttt (GT) 9-11 tattttaagaattatattc	2762
UGT2A1	65	intron5 + (3819-3838)	gcttagtattattatattat AA/Δ gtcatatataatagcttagt	2763
UGT2A1	66	intron5 + 4785	caatattttatgtcattttt T/Δ ctacatttactctgtttcc	2764
OATP1	1	5' flanking - 916	agacagacagacacacaaac (AC) 8-12 tcaacacatgttaaactctc	2765
OATP1	2	5' flanking - 843	tatcttcaatgaaataaaa A/Δ caaaattgtctaattttctg	2766
OATP1	3	5' flanking - 526	acagagttagatgttcaataa G/A tattttgttatctgtgaga	2767

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
OATP1	4	5' flanking - 172	acaaacacaaactcaagat G/A tgtgtattataaaagtagcta	2768
OATP1	5	intron1 + 206	ttgattcaggcaagtttagtc C/G taatggctttgagagactt	2769
OATP1	6	intron1 + 454	caacatacaataatttccct G/A taagaaaaatggccattttg	2770
OATP1	7	intron1 + 999	gttttagcaaggttagatatt A/G atgtggatgttaagacaaaa	2771
OATP1	8	intron1 + 1223	ttgctagaagcttagtaggac C/T agctttataatacagagat	2772
OATP1	9	intron1 + 1326	aactagtttagcaacccatg T/C gtttttaggggaaaagcaatg	2773
OATP1	10	intron1 + 1336	gcaacccatgtgttttaggg G/A aaaaagcaatgaggtcatgat	2774
OATP1	11	intron1 + 1498	atagtttgcctttaagaata C/T actctgagaaggtttatagt	2775
OATP1	12	intron1 + 5041	ttatgctcccgaggagttag C/T tctotaaatgcataaggaga	2776
OATP1	13	intron1 + 9532	aaagactgggagcacitccc A/G atgacaaatactagactaga	2777
OATP1	14	intron2 + 198	ttacctatattataacacct A/C atattggccacatactctacc	2778
OATP1	15	intron2 + 961	aaaaagttatataagaataat A/G agtgcactcctttctagtt	2779
OATP1	16	intron2 + 1110	gtctactagtgttcaactcc T/C tttagacttttagcctgtatca	2780
OATP1	17	intron2 + 1419	aaagcctaagaaggatgcag T/C gcaatagcctatgtgagaag	2781
OATP1	18	intron2 + 3339	tatgglttgcaaaaaactta T/C tcttatattgttttttca	2782
OATP1	19	intron3 + 66	caggaaatgaagttgcaact T/C cctctctaggagcaatgctt	2783
OATP1	20	intron3 + 205	tcagttttgtcaattttacac A/G atggggattgggacctttt	2784
OATP1	21	intron3 + 6377	aatgaatagacttttagtta C/T tggatttttttagtgataaat	2785
OATP1	22	intron3 + 7238	tgaatgtcacatttttttaa G/A ttgtgttcttattctcata	2786
OATP1	23	intron4 + 1016	ttttattctggattcatgtt T/C gtggaaattgcagtagtcca	2787
OATP1	24	intron5 + 110	tcacaaatgatgagtagagt A/G tctggcacagttggccttc	2788
OATP1	25	intron6 + 496	agtgtctgaattataagcca A/G ttttatagtgtgtgggacc	2789
OATP1	26	intron7 + 1934	aaagtgaaggaaattaaaa G/C tgagaacttgacctgaatg	2790
OATP1	27	intron7 + 2140	tagaatgtaccaaatgaatc A/G gcactctgaggatgggacc	2791
OATP1	28	intron7 + 2365	tgaaatcttctttatcaact C/T gattttctccagactttac	2792
OATP1	29	intron8 + 88	gcaaaactcctaagtgaagt G/C tttaggataatttttgact	2793
OATP1	30	intron9 + 534	tcataattttgtattttaaag G/A ttatctgggttttactgaaa	2794
OATP1	31	intron9 + 1286	tattcttctgagataaata C/T tgaaggagtgtcatgtgtt	2795
OATP1	32	intron11 + 215	ttcactcctattctctgcta C/T ttcttctctattttcttag	2796
OATP1	33	intron11 + 663	ttcttctctttttggagctc T/A aaagttagattcagtttaatc	2797
OATP1	34	intron11 + 999	atcatcactgcagtagagtt A/G gaattatctaaactttgtat	2798
OATP1	35	intron11 + 16727	tttcttttttttacaactt A/G ttacttttccaggtgtatga	2799
OATP1	36	intron12 + 48	ctatcagaacaattattatta T/G tattatttttttttacactt	2800
OATP1	37	intron12 + 686	tatgttttgataaactttgc C/A gtacaaataaagaaaatiga	2801
OATP1	38	intron12 + 708	tacaaataaagaaaattgaa A/G tatttccaataaatacaagt	2802
OATP1	39	intron13 + 418	tctctgggtcccaaaatcat A/G tattttctccctctttacat	2803
OATP1	40	intron13 + 436	atatattttctccctcttta C/A attttgtctgaacaactcttc	2804
OATP1	41	3' untranslated + 2130	gtctttaagaacctaaaaaa C/A ctcttaactcaaaataataa	2805
OATP1	42	3' flanking + 57	agtgaactaaagtttttctta C/A aaaaaggtgtctgaatcaaa	2806
OATP1	43	3' flanking + 572	aatacactatggtattttat G/A tgaactataaattggagtag	2807
OATP1	44	3' flanking + 788	atttctcaaatgatcagatg C/T atcatatgaaaaaagaagc	2808
OATP1	45	3' flanking + 1356	aggtagctgacataaatggg G/A gcagaggacataatgaggtt	2809
OATP1	46	5' untranslated - (189-188)	attttctaatctgtatttaa (A) gcgttccaggtatttttcta	2810
OATP1	47	5' untranslated - (189-188)	attttctaatctgtatttaa gcgttccaggtatttttcta	2811
OATP1	48	intron4 + (725-726)	tgatctttaatagcggggaa AA/Δ caggcaagtagcctatagtt	2812
OATP1	49	intron4 + (1082-1083)	attgagtcaggaaacacaaa CA/Δ gtttcaaaaatttgaaaaat	2813
OATP1	50	intron4 + 2301	aatgtcatgtcttttttttt T/Δ aatgcagaggtgtacaaagga	2814
OATP1	51	intron9 + (241-246)	attgtatgtcatgtgggtg TGI/GI/Δ catgattgtctttgtatg	2815
OATP2	1	5' flanking - 2574	ggataaggcaaccccatgt A/G tcaactgctcaggagagggga	2816
OATP2	2	5' flanking - 2366	aacataggaaatgtgcagagc C/T ctgtgggattagagaagag	2817
OATP2	3	5' flanking - 2244	tgatgtgcccagagctttga T/G catgttgggtatagaaaaca	2818
OATP2	4	5' flanking - 1723	tccttcagacttcaaaagcc A/G tgatatttcatcagagctgt	2819
OATP2	5	5' flanking - 1180	tgcttatttaacaggcaata T/G ctttggctcctgagccaga	2820
OATP2	6	5' flanking - 811	tatgtcatatgtatataca G/A gtaaaagtgtgtatattgt	2821
OATP2	7	intron1 + 7188	aatcatttgaatttaagaa A/G aaaaatgttccagagaaaaa	2822
OATP2	8	intron1 + 7331	gtgaatggaggaacaaagt T/C ccaccttttttctgtaata	2823
OATP2	9	intron1 + 7391	agagagatgtgaatatgat T/G ttctgggggaagttagggaa	2824
OATP2	10	intron1 + 7886	ttgttagtagaagaagaatc G/A aagcctaanaactaaaggaag	2825
OATP2	11	intron1 + 7958	ttgctattatataattttt T/A aaaaaagatttcttaatat	2826
OATP2	12	intron1 + 7959	tgctattatataattttt A/Δ aaaaaagatttcttaatat	2827
OATP2	13	intron1 + 8036	ggaaaaaattgggtgaatt A/T atcaaaagggcagcttattac	2828
OATP2	14	intron1 + 9164	acattatattctatataaaa G/T agtcagttgaagtaaaaagt	2829
OATP2	15	intron1 + 10123	tctgtcttctcacttttgt T/G tccagcattgacctagcaga	2830
OATP2	16	intron2 + 193	tgattaagtatttctttggc G/A aaatttttgatgcttaatag	2831
OATP2	17	intron2 + 1020	ttgagtaacatttaggccaa G/A tggcagtcataaggaaaaag	2832
OATP2	18	intron2 + 14865	agaggaattaatcataagag G/T ttattttggctaaagtga	2833
OATP2	19	intron2 + 14931	gttagttaataacagaaaaa A/T tatcagaatttttaaaaaat	2834
OATP2	20	intron2 + 15417	ttctaaaaaagtaagctaa A/T tattctatattatactacta	2835
OATP2	21	intron2 + 20823	ttgtataagagatacaaaa C/A aatttctactaggggaata	2836
OATP2	22	intron2 + 20852	ctaggggaataaagcttca G/C taaggagggtggcattaaagt	2837
OATP2	23	intron2 + 20930	gtgagagagaagcagcaggt A/G ccacagataaataaggtgag	2838
OATP2	24	intron2 + 21360	ttcaaaagctgtatttttca T/C tagtgccttttttgtaataaa	2839
OATP2	25	intron2 + 21467	tatatcacacaatccctgtcc A/G gaagatgtgtataagccaa	2840
OATP2	26	intron2 + 21621	tatcaatacttataagagaa A/G ctaactatttctaactagggga	2841
OATP2	27	intron2 + 22760	ttccccacctcctgtttgggt C/G tctctttaaacttctccttg	2842
OATP2	28	intron2 + 23199	cctatctgcacataaacatta C/T aaacttatggcaattataaa	2843
OATP2	29	intron2 + 23218	acaaacttatggcaattata A/G aactcaatcatattatact	2844
OATP2	30	intron2 + 23330	gccctttgtctgttctct G/A taacttgcctcaactacatag	2845
OATP2	31	intron2 + 23673	cggagacggtagctcaaac T/C gaggatgaaaatagacattt	2846
OATP2	32	intron3 + 89	ggttatcaactggggttaaat T/G tatctctcacaggcaatttg	2847
OATP2	33	intron3 + 224	tgtcaaatattctataatgc A/G caaagaatgatgttaactgaa	2848
OATP2	34	intron4 + 97	ccctttaaattagcaggttac C/A ttttgagaagatacccaata	2849
OATP2	35	intron4 + 568	ttcatgatccaattgtggc A/G acgtatttccaggcaacaaag	2850
OATP2	36	intron4 + 599	aggcaacaagatagaagaag A/G aagaataagaagcaacaaa	2851
OATP2	37	intron4 + 753	aaaatagacattattccaaag T/A taccagtttccgggttaaaa	2852
OATP2	38	intron4 + 781	ttccgggttaaaaatcccaa G/C tataattactgtggaaggaa	2853
OATP2	39	intron4 + 1196	aaggaccacaactagatca G/T cattgctctaaatatgccat	2854

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
OATP2	40	intron4 + 1229	atgccataaatatgtgacac T/C ttgcaccctgggtatttctac	2855
OATP2	41	intron4 + 1623	catctagtgtgaatggatta G/C attttatttttactacattt	2856
OATP2	42	exon5 + 388	attctaaagaaactaatatc A/G attcatcagaaaattcaaca	2857
OATP2	43	exon5 + 452	taatacaattttttactactca A/G tagagcatcacctgagatag	2858
OATP2	44	intron5 + 165	ttaatatcacacagttcgccc A/T ttaacaacacaggttttaaac	2859
OATP2	45	intron5 + 189	acaacacaggttttaaacac G/A cgttttcacttctatgcaca	2860
OATP2	46	intron5 + 191	aacacaggttttaaacacac G/A ttttcacttctatgcacaatt	2861
OATP2	47	intron5 + 507	atataactttgtcttcattg C/T aaaaggcaaacgttttatatc	2862
OATP2	48	intron5 + 520	ttcattgcasaaggcaaac A/G ttatatcatttaaaagacttt	2863
OATP2	49	intron5 + 856	agtcacgataaacctaatag A/G ataaaaacaacaaaaagaaa	2864
OATP2	50	intron5 + 1157	acagataatttttacttgtt T/C gtgtctttctgtatgatatg	2865
OATP2	51	intron5 + 1226	ccttgattgtaataatctcc A/C catgccaaagatggggccag	2866
OATP2	52	intron5 + 1228	ttgattgtaataatctccac A/C tgccaaagatggggccaggt	2867
OATP2	53	intron5 + 1304	actgtctcgtgtgtaataa G/T aagtctcacagaatctgatg	2868
OATP2	54	intron5 + 1348	ttataaatgagagtctccct G/A caaaagctcttctgctgcc	2869
OATP2	55	intron5 + 1407	ttgctcttcttcatctcc G/A ccatgattgtgagccccc	2870
OATP2	56	exon6 + 521	gtcatcacatgtggatgatg G/C gttcatgggtaatatgcttc	2871
OATP2	57	exon6 + 571	gggagactcccatagtacca T/C tggggcttcttcatattgat	2872
OATP2	58	exon6 + 597	ctttcttaccattgatatt C/T gctaaagaaggacattcttc	2873
OATP2	59	intron7 + 33	agaacaaggatccatgataa C/T gcttttctaaagcacatgc	2874
OATP2	60	intron7 + 267	caaaaataccaaatgtaaaa T/A gtctccctcccaaacgact	2875
OATP2	61	intron7 + 1260	gtaattctcattttctctgc A/G ttacacatttgtaaaccttt	2876
OATP2	62	intron7 + 1386	agttcacaatttaagccaa G/A agcatgcctttattgttaacc	2877
OATP2	63	intron7 + 1472	ctttaccacatgacagaatg G/A catgttcttagcaataata	2878
OATP2	64	intron7 + 1697	tttacaatttcaattttaga C/A atagccttagagtagctac	2879
OATP2	65	intron7 + 2273	ttctcactccttctatcagc C/T gattatgaccccttagttact	2880
OATP2	66	intron8 + 207	gtggagagaattaggtttg T/C actttttagcaggagagaac	2881
OATP2	67	intron8 + 546	tcgggagagaatttctcccta T/C gtaattagagtaaatattat	2882
OATP2	68	intron8 + 565	atgtaattagagtaaatatt A/C ttttgtaattatctatcta	2883
OATP2	69	intron8 + 668	taagtaattgaaattagatg G/T catcagcatttgacagtgc	2884
OATP2	70	intron8 + 739	tgagagaccattgagagta A/G taacaagaagaaatgacttg	2885
OATP2	71	intron8 + 2193	tgatcacagatccaaatgac A/G taatttctacatgaacaga	2886
OATP2	72	intron9 + 112	atttttagtaatacaggataa G/C tataattttctgtattctt	2887
OATP2	73	intron9 + 266	ttagaggtagtatctgtata A/G ttggatcttataatttagtg	2888
OATP2	74	intron9 + 305	tgctaagatctgagacaaac C/G cttttgtaattataatcatt	2889
OATP2	75	intron9 + 888	aggttctgtatgttttttaa T/C aaatgacaaagatatattaa	2890
OATP2	76	intron11 + 10224	tacactgttccataaaaaa T/C tctctatattatttctagt	2891
OATP2	77	intron11 + 10359	attaatagattcaacgtgag G/C ttcccttaaaccttttagccta	2892
OATP2	78	intron11 + 10916	cttatatagaagaatcca C/G aaactattttaccttttat	2893
OATP2	79	intron11 + 10997	aatatattagtttgaacaag T/C gagacttcaataatataat	2894
OATP2	80	intron11 + 11018	gagacttcaataatataat G/A caatgtatttgcagcactgt	2895
OATP2	81	intron12 + 442	aacatttcaaacctttttaa C/T gactcacagcatgactttta	2896
OATP2	82	intron12 + 445	attccaaaacttttaacga C/T tcacagcatgacttttataa	2897
OATP2	83	intron12 + 447	tccaaaacttttaacgact C/A acagcatgacttttataata	2898
OATP2	84	intron12 + 907	aatgaaaaagaagctggcaga T/C tgaacatacgaatgagag	2899
OATP2	85	intron13 + 65	tatatatatatatatatata C/T acacacacatatatatata	2900
OATP2	86	intron13 + 870	aattctgagtatctctattt G/A atgtatccaatctgtggcac	2901
OATP2	87	intron13 + 1935	taaaaaaaagaaagtctgc T/C ttacagcaantgagccaag	2902
OATP2	88	intron13 + 2261	aacgaatctccaaattttt G/C aacttttatttaatacaaat	2903
OATP2	89	intron14 + 248	tcaaggataataaccaactt G/A tcaaaaatcagagataatag	2904
OATP2	90	intron14 + 2463	atttgtttactaatatggaa C/G cttcttcaagacatattttt	2905
OATP2	91	intron14 + 2857	tcacatgtatttccaggac A/T cctggcaagatgctcctcag	2906
OATP2	92	intron14 + 11458	atctccagaggtctctgtct C/T tccccaaggtccactgacc	2907
OATP2	93	3' untranslated + 2243	ataataaaacaaactgtagg T/C agaaaaatgagagtactca	2908
OATP2	94	3' untranslated + 2404	tcttaataaaacaaatggat A/G tcatacaggtagaggttaaa	2909
OATP2	95	3' untranslated + 2515	cagagtttgaactataatc T/G aagccctgaagtctagcttg	2910
OATP2	96	3' untranslated + 2539	gcctgaagcttagcttggat A/G tatgtacataataatctgt	2911
OATP2	97	intron1 + 457	taattggcaacataaaaaa (A) cagggtgtctcaagtcacat	2912
OATP2	98	intron1 + 457	taattggcaacataaaaaa cagggtgtctcaagtcacat	2913
OATP2	99	intron1 + (7537-7538)	gatcagcattacaaccaaga (G) atggagaatgacattcagga	2914
OATP2	100	intron1 + (7537-7538)	gatcagcattacaaccaaga atggagaatgacattcagga	2915
OATP2	101	intron1 + (10032-10035)	gtgtgattctatattactt ACCT/ $\Delta$ gtttcaaatctctctccaca	2916
OATP2	102	intron1 + (10058-10061)	ttcaaatctctctccacaaa TTTA/ $\Delta$ tttttctattaaattgtaat	2917
OATP2	103	intron2 + (413-423)	acttatttaaaattctttt (A) 11-13 caaaaaacaggatttaaaaa	2918
OATP2	104	intron3 + (1595-1603)	ttgccaaagtaattcaagtc (T) 8-10 gtatttaaaacaacttttca	2919
OATP2	105	intron4 + (10-23)	ttcatgggtagtaagtggt (A) 12-14 cctctgtgccactatcagta	2920
OATP2	106	intron5 + (1567-1572)	gtgaatataaattacttgta CTGTA/ $\Delta$ aattaaaaaaataaagtag	2921
OATP2	107	intron5 + (1577-1585)	attacttgtacttgtaaat (A) 9-10 taagtagaataattaagagt	2922
OATP2	108	intron8 + (1939-1941)	ttctctaactctctactact CT/ $\Delta$ atttcaagcagatgcaactg	2923
OATP2	109	intron10 + (3077-3078)	aaattctttatctacttttt (CTT) ttccctctttctctgttttc	2924
OATP2	110	intron10 + (3077-3078)	aaattctttatctacttttt ttccctctttctctgttttc	2925
OATP2	111	intron11 + 11011	aacaagtgagacttcaactaa A/ $\Delta$ tataatgcaatgtatttgca	2926
OATP2	112	intron12 + (1160-1169)	agcatgacatggttagagatg (A) 9-11 gcaatttttaacattgttaa	2927
OATP2	113	intron12 + (1310-1312)	ttcatcttaataataaagt TGT/ $\Delta$ ctactcaaaaggagaagctc	2928
OATP2	114	intron13 + (9-34)	tacagcactaggtatgatg (A) 24-27 tatatatatatatatata	2929
OATP2	115	intron13 + (35-64)	aaaaaaaaaaaaaaaaaaaa (TA) 10-21 cacacacacatatatat	2930
OATP2	116	intron13 + (1379-1387)	aaaattattccaccataac (A) 8-10 caaagtaaggtatgaacac	2931
OATP2	117	intron13 + (1916-1928)	aattctcttaaaataatggtt (A) 11-13 gtctgttttacagcaattg	2932
OATP2	118	intron14 + (588-596)	caattatactttaccctttt (A) 8-10 ctaatttcaaatcatatat	2933
OATP8	1	5' flanking - 1413	aataggggttaataactct G/C aaacttatgtatttctcat	2934
OATP8	2	5' flanking - 1345	gaatttatcctacagatag A/G ccacacagaaaatgacatat	2935
OATP8	3	intron1 + 38962	atgaaattagttttaaataa G/A caaccttaactatactctc	2936
OATP8	4	intron2 + 253	acagacttaccacaaagaa T/G tatccttcccaaatgtcta	2937
OATP8	5	intron2 + 329	actcatggtttgcaaataa C/G tttttaggaacatttatctc	2938
OATP8	6	intron2 + 2568	coattctgggtctttcttcc G/A tgaactattttccatcagt	2939
OATP8	7	intron2 + 2679	ctcttattgtctcttctcca T/C gtttttaacttaaatatta	2940
OATP8	8	intron2 + 2753	caggaaactttcacaaaggc C/A ctaatttaatttaagctccct	2941



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
OATP8	9	intron2 + 3132	tggtttaatgtaggagagtt T/C accttcacagtttaaaattaca	2942
OATP8	10	intron2 + 3193	aatgtcttgggcatatttgc A/G ttcatittggggcattcagtt	2943
OATP8	11	intron2 + 3207	atttgcatcatttggggcga T/C tcaattctactagatacaaa	2944
OATP8	12	exon3 + 334	gaactggaagtattttgaca T/G cttaccacattttctcatg	2945
OATP8	13	intron3 + 76	agaattttatittttatactt G/A taagtgggcagttacctttt	2946
OATP8	14	intron4 + 2443	tcaatttcatgttgccttta C/T agttataggtattctaaaga	2947
OATP8	15	intron4 + 67	taatcacgtctataaaagttt G/G tgatattctttaacaaaatt	2948
OATP8	16	intron4 + 91	tattctttaacaaaattgat T/A taagaacaaatagggaagaac	2949
OATP8	17	intron4 + 197	ggtttgaactgcacctgttc G/A cttatatgcagcttttctcc	2950
OATP8	18	intron4 + 813	tttaacagaataaaaaaaa T/A attttgtaacgacaaaagaa	2951
OATP8	19	intron4 + 974	atagtcaccttaaaaaaac C/G tggatttttaaatatgtaat	2952
OATP8	20	intron4 + 1003	taaatatgtaagtacataa G/T gaattatgcatattttgt	2953
OATP8	21	intron6 + 155	catttaaatcagaataaaa A/G agaaatttagcttctattta	2954
OATP8	22	intron6 + 750	atccaaactgggttagatt T/G cctttttctgcctctctcc	2955
OATP8	23	intron6 + 780	gcctctctccatctgcacc C/T tctcttttctcagcaaaaa	2956
OATP8	24	intron6 + 1248	ctatgccctgtaattctaca C/T tccctttatttaaaattgg	2957
OATP8	25	intron6 + 1500	tcgtgtctgtgttagcatat A/G ataactcatcagggtttgtg	2958
OATP8	26	intron6 + 2008	ataacataaatgagtaaga A/G tatcaaggccagggaattag	2959
OATP8	27	intron6 + 2087	actactctcccatcacac C/A aaaactcatgtctctccag	2960
OATP8	28	intron6 + 12305	tcactatggaaggactgcaa T/C cattatcattatttccaga	2961
OATP8	29	intron7 + 363	taacaaatgataccagccat C/G atactattctctgttaagtag	2962
OATP8	30	intron7 + 411	cctttatttttggagaacct G/G gggatgatattaagacgta	2963
OATP8	31	intron7 + 428	cctgttgatgataataaga C/A gtatatagatcactgtaata	2964
OATP8	32	intron7 + 634	aaaattatataatatacat A/G taactttacctaaagtattca	2965
OATP8	33	intron7 + 1791	tgtttttttaagggtagta T/C gtaaatagtaaaagcaattt	2966
OATP8	34	intron7 + 2000	agttgacaaatttgcctcca G/A gtagcataatgtcaactgaa	2967
OATP8	35	intron7 + 2043	gtttattgaccattttttta A/G tggatcaacattgtagttag	2968
OATP8	36	intron7 + 2171	attttttttagcaaaaggtc G/A cgaactctctagaagaacctc	2969
OATP8	37	intron7 + 2173	ttattttgacaaagggtgc G/A actctcttagaagaacctcac	2970
OATP8	38	intron7 + 2179	tgagcaaaagggtcgcactct C/T ttagaagaacctcacaaatca	2971
OATP8	39	intron7 + 2219	atttgaactttaagcttta T/G ataacttattttacaaaat	2972
OATP8	40	intron7 + 2261	cagatattaatataatattt A/T ttattgaataatgttatttt	2973
OATP8	41	intron8 + 150	acaaaatttctccatctgt T/C atatcatcgtttgttgcatt	2974
OATP8	42	intron8 + 154	aaatttccatcttgaata A/T catcgttgttctgcatttga	2975
OATP8	43	intron8 + 1303	ttttttttagatggagttct C/T gctctgttggccaggctggg	2976
OATP8	44	intron8 + 1372	aagctccgctccagagttc T/G ccacctctctttaaagaaa	2977
OATP8	45	exon9 + 1272	tccttctgttttcaactctt A/G tatttccctctaacttgcga	2978
OATP8	46	intron10 + 63	tcacagatttgatttaata A/T tacttatcaaatcttccat	2979
OATP8	47	intron10 + 911	cttggcccaatactccacaa C/T gtatttataaacggcatgga	2980
OATP8	48	intron10 + 972	tcctagtttccctgaagata G/A gctacaacttttagtaaaact	2981
OATP8	49	intron10 + 1101	tcctgtgctgtgtgtgttc A/T gtatgtaagacctgaagag	2982
OATP8	50	intron10 + 1103	cctgtgctgtgtgtgtccag T/C agtgaagacctgaagagag	2983
OATP8	51	intron10 + 2027	cccatittcatgagtgagta A/G gttttgtccgttttcaaaact	2984
OATP8	52	intron10 + 2028	ccattttcatgagtgagta G/A ttttgcctcgttttcaaaact	2985
OATP8	53	intron10 + 2148	gtattttgaaagaaaatgt A/G ggtggaagagaaaattttta	2986
OATP8	54	intron10 + 2214	atatacagaatttcatcac T/C aatttcttaaaattcctaata	2987
OATP8	55	intron10 + 2316	taaatatttttagtttgagac T/G tctttaaatataatggaatg	2988
OATP8	56	intron10 + 2372	tgtattttggcaaatgtattt G/T ttaatttttcaaaaactatt	2989
OATP8	57	exon11 + 1557	cagaacagaaattactcagc A/G cacttgggtgaatgcccaag	2990
OATP8	58	intron11 + 147	tttcttagaattattttgat A/C ttcaataacatcatttaata	2991
OATP8	59	intron11 + 10339	aaaaaactgcatttttagtg G/C ttatgtagaagaagatttgc	2992
OATP8	60	intron11 + 10358	ggttagctagaaaagatttg T/G ctcataacacataaaatta	2993
OATP8	61	intron11 + 10538	caacagaggatcaatgataa T/G gaatatctttaaattaaaca	2994
OATP8	62	intron12 + 55	ataaatattaatgttaata C/T taagagactgaatgcaattaa	2995
OATP8	63	intron12 + 1802	taaaatgaatcggtaaaaca T/G tcatgtataaatcaactgtca	2996
OATP8	64	intron12 + 2612	ataggcatataataactctt C/A ttccctctgtatataggagg	2997
OATP8	65	exon13 + 1833	aacagctgtggagcacaagg G/G gctttaggatataataatc	2998
OATP8	66	5' flanking - (1590-1587)	ataacataacataacta TATC/Δ tatgttatgtgtctgcttat	2999
OATP8	67	5' untranslated - (11-28)	agcatcagcaacaattaaaa ATATTCAC	3000
OATP8	68	5' untranslated - (4-7)	TGGTATCTG/Δ tagtttaaatggaacac	3001
OATP8	69	intron4 + (213-214)	tattcacttggtagtcttag TTAA/Δ aatgtgaccaacatcaaca	3002
OATP8	70	intron4 + (213-214)	cctgttgccttatatgcagc (T) ttttgcacaaacacagaa	3003
OATP8	71	intron4 + 505	cctgttgccttatatgcagc ttttgcacaaacacagaa	3004
OATP8	72	intron4 + 616	tataactttcttttataaa G/Δ atgcaaaatgttatagcatt	3005
OATP8	73	intron4 + (804-812)	aaaaataaatgaagtgggg A/Δ aaaaaaatgatttcaagttt	3006
OATP8	74	intron4 + 855	acatccatgtttaacagaat (A)9-11 tatittgtaacgacaaaaga	3007
OATP8	75	intron7 + (619-628)	gagattgtttaaccaaatga G/Δ gaactattattcaacacac	3008
OATP8	76	intron7 + (1773-1779)	ttttatatatgaattaaaa (AT)4-5 catatataatcttacctaag	3009
OATP8	77	intron7 + (1773-1779)	attttctatatattgaactg (T)7-8 aagggtagtgtgtaaatg	3010
OATP8	78	intron8 + (1270-1290)	tagtgtgccacccttctctc (T)19-23 gagatggagctctgctctgt	3011
OATP8	79	intron10 + 665	ttctttcttaactcaaaaggc T/Δ ttttttttccatgtgacac	3012
OATP8	80	intron11 + (247-250)	aaaaactttaaggacacac TGAT/Δ tgacagtgtccttgattgta	3013
OATP8	81	intron12 + (1622-1630)	aaataaattgttggcatcta (T)8-10 atttttctaagggtcgtct	3014
OATP8	82	3' untranslated + (2464-2465)	gagaaaagcctgagctttt A/Δ aaaaaaatgaacactttg	3015
OAT1	1	5' untranslated - 127	gcagctcgagactcagctccc G/A gagcaaccagctcgaggagg	3016
OAT1	2	5' untranslated - 20	gaaggcctcagccccagcc A/G ctgggtgtggcctggcccaa	3017
OAT1	3	intron3 + 150	caatagacaacacttttctc G/A ggctcatgcccctgaccc	3018
OAT1	4	intron4 + 211	ttctctggttcccccactc A/C gttctccagcctgctgctc	3019
OAT1	5	intron5 + 33	ggagcttcccatgataacct C/T ccagggttccaccccaaac	3020
OAT1	6	intron6 + 168	gaaccagatgccccagcct C/T gactcagctccagctctccac	3021
OAT1	7	intron1 + (58-71)	ggaagatgggggctttgtt (A)13-15 gtacatggagaaattaaactg	3022
OAT1	8	intron3 + (1306-1319)	aatagggttgaggaggagcag (A)12-15 tcaagagtgtgagggggca	3023
OAT2	1	intron4 + 842	ttgacctcaaaagtgtttg G/A attacaggcatgggaccttg	3024
OAT2	2	intron5 + 33	gtgtgtgtgagcatcatat C/A tgtgtgtgtggggagtgagg	3025
OAT2	3	intron5 + 183	ccacatccatcattcgagac A/C aactcgtctcagctgccatg	3026
OAT2	4	intron5 + 184	cacatccatcattcgagaca A/C actcgtctcagctgccatga	3027
OAT2	5	exon7 + 1269	actagactgctagtgtctctc C/T ggtgagccagctccatagg	3027

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
OAT2	6	3' untranslated + 1792	ataaatgtgtacatgagtg A/G tgaacacaaatcacataaggt	3028
OAT2	7	3' flanking + 1386	tgtagcagccacacatcgcca G/A tttcacacctgagagagag	3029
OAT3	1	5' flanking - 580	ctgtgtcagagacacagaca C/G ggaggttcctggctgccccag	3030
OAT3	2	5' flanking - 463	ttcctgagaggcaaatccccc T/C tccctactcgggaggtgcc	3031
OAT3	3	5' untranslated - 16	cctgccacacagctctggctc G/A tcttgccocagtgccatgac	3032
OAT3	4	exon2 + 153	cctgtccaccactgtgcgcc G/A cccacacaaatgctccacagg	3033
OAT3	5	intron2 + 177	gcaccaagacccttggcttc T/C tccactcagagtgccaaaga	3034
OAT3	6	intron2 + 6201	gctcatctctctgtgctctt T/G tccccagcacaggttcttc	3035
OAT3	7	intron3 + 79	ctgtctccaccctgtgcacc G/C caaagaggcaaaagagctggg	3036
OAT3	8	exon5 + 723	tggcgttggctgcagttaac T/A gtgtccattcccttctctgt	3037
OAT3	9	intron5 + 524	tcgaagtacaaaggaagtt T/C aaagagaagcctgagcctgg	3038
OAT3	10	intron7 + 386	gaccaatgggtttcagactc G/A aagacaaaaattatgtttat	3039
OAT3	11	intron7 + 754	gccacgtcagacatgacca G/A tcaatcacagcactttctcc	3040
OAT3	12	intron9 + 81	attgtcctgtctctaccaca G/A gggagccatcctttatgaac	3041
OAT3	13	5' flanking - (661-660)	tacatttgggtcccccagggg (G) agcggctgacaggagagaa	3042
OAT3	14	5' flanking - (661-660)	tacatttgggtcccccagggg agcggctgacaggagagaa	3043
OAT3	15	intron8 + (211-212)	tctgacttggactggggcaaa AA/Δ gtatgggtgtatctggatag	3044
ALDH1A2	1	5' flanking - 716	caggagatcctcattctgagc C/G cgaggccaggggagctcgca	3045
ALDH1A2	2	intron1+314	cgttcccgactgcgcgggg G/Δ aaggcctcggaacccgttag	3046
ALDH1A2	3	intron1+ (664-675)	ttttgaactgaagaacttac (T)11-13 ataacgaacttgacatctt	3047
ALDH1A2	4	intron1+1370	gcacgacgttagaagtttt A/G ttttatgagggtctctaacc	3048
ALDH1A2	5	intron1+1557	ggtagctttttcagaattta A/Δ ttgggaagctcttccagttc	3049
ALDH1A2	6	intron1+1934	tcagctcttttagtgagactt C/G taaattttctaaagacaagca	3050
ALDH1A2	7	intron1+ (1971-1980)	agcatatggacaagcagta (T)9-11 aaacgtgaagacagaagct	3051
ALDH1A2	8	intron1+2295	tactgtaagacaatatgttta T/C tgttttttgtcttcttaaac	3052
ALDH1A2	9	intron1+2387	ttgggaccacacatagagca C/T tacttaaaaaaatgaccag	3053
ALDH1A2	10	intron1+2841	aggaatgtgcttttttaaac T/Δ agatgggtgttagtcaaggag	3054
ALDH1A2	11	intron1+3035	gacttttataattttgtata A/G ctgatattataggaatacac	3055
ALDH1A2	12	intron1+3319	aaagagttatgttttttttt T/Δ ctgcatctgatatttatatgg	3056
ALDH1A2	13	intron1+3474	ttgtcttttttatattcat T/C taaactctgttttctgggg	3057
ALDH1A2	14	intron1+4186	ccttccaaacctttacttaa G/C attgtctgttttggctataa	3058
ALDH1A2	15	intron1+4222	cataaattgtcagtcacaa A/G catgttaaatagaggacttca	3059
ALDH1A2	16	intron1+4254	aggacttcagggttttttttt T/Δ aaataccttttcataactat	3060
ALDH1A2	17	intron1+4397	cccttccactacatgggctt A/G tgttaccatgtggaattatc	3061
ALDH1A2	18	intron1+5935	aactccagggtgcaaataga T/C gtttctggtatttttaagtag	3062
ALDH1A2	19	intron1+6206	ttttgaagccctcctagca T/G tttcttaattttctttattga	3063
ALDH1A2	20	intron1+9559	agataaattgatgaattatt C/T actctgtgtctgtgatagat	3064
ALDH1A2	21	intron1+ (9631-9632)	taaaaagaatttctaaaga (AAGA) ccttttttttgaataactct	3065
ALDH1A2	21	intron1+ (9631-9632)	taaaaagaatttctaaaga ccttttttttgaataactct	3066
ALDH1A2	22	intron1+12731	ctgaatatgaaacctttcag T/A gtaccttgcagagcagtgaa	3067
ALDH1A2	23	intron1+13442	cagtgctataaagatccagc G/A gaatacaaaatgtttcatat	3068
ALDH1A2	24	intron1+ (14173-14176)	tctaaaaaataaataaata AAAA/Δ gagaataaagttaagat	3069
ALDH1A2	25	intron1+14586	actcattattgtttcaaaag C/G cttcttcaaccttaggatat	3070
ALDH1A2	26	intron1+14595	ttggttcaaaagccttttcca A/G ccttaggatatgcattgagg	3071
ALDH1A2	27	intron1+14711	gtttgagacatttaacttcta A/G ttcaactgaagatgctagtt	3072
ALDH1A2	28	intron1+ (15327-15337)	gaagagcacagtagaagaac (T)9-11 aacctagcaataactattga	3073
ALDH1A2	29	intron1+17258	atcagtagaatgtgttgggc G/A tacaacacttaatttaaat	3074
ALDH1A2	30	intron1+18277	taatacaaatcatttgaagc A/G ttactattataaaaaacaaa	3075
ALDH1A2	31	intron1+18734	ctttgagcacctactgcatt T/A taagtgtgttaagatgtgg	3076
ALDH1A2	32	intron1+19081	ttaatcacctcaatcttttaa C/T gaattttctgatttttcttt	3077
ALDH1A2	33	intron1+21514	aatcaggatattggggggttc G/A ttctttattctgccacaaat	3078
ALDH1A2	34	intron1+21732	catttttaaatagtctttaa A/G taggacttggctgttaaat	3079
ALDH1A2	35	intron1+21865	tgccatagggttaaaaagt C/T tgtttaggactcttttcca	3080
ALDH1A2	36	intron1+26282	taaaagaaggagaaaaaa A/Δ ctaactgagactttgcagg	3081
ALDH1A2	37	intron1+27805	ggatgatgctaccacaggaa T/C tgcacacttcagacagtag	3082
ALDH1A2	38	intron1+28204	tcactccatttttttaactgt C/G ctctctaaatgtgtgttaa	3083
ALDH1A2	39	intron1+28521	tctttgttaccttctttaa T/C cggggtatcagataacttcc	3084
ALDH1A2	40	intron1+49478	gaataaaagtaggggacat G/T ggtaagaccacttttccct	3085
ALDH1A2	41	intron1+49834	gccttcaattttctcatgt G/T taatagagagaaaacctgc	3086
ALDH1A2	42	intron1+50351	gactgactgggttcataagtt C/G agaaatttctactgtgtgt	3087
ALDH1A2	43	intron1+51181	tgattattaccatagtagttc C/T gtaacacttggccgttgact	3088
ALDH1A2	44	intron3+654	ttaacctctcttgtagtaaaa G/A gaactctcagaaccagagg	3089
ALDH1A2	45	intron3+668	gtaaaaggaactcttcagaa C/T cagagggttaggtacggacc	3090
ALDH1A2	46	intron3+712	catacacttctgctccgttt G/T cctgtcattctgtgagcca	3091
ALDH1A2	47	intron3+1273	tattcactgtgaaaaaagg T/A gtttcatggtagaagaattc	3092
ALDH1A2	48	intron3+1743	ccacacctaaatgagattcc C/T gttttaaacactctcaagct	3093
ALDH1A2	49	intron3+2891	tgacatatatactcattgt A/G gttttacttaggaactagac	3094
ALDH1A2	50	intron3+2919	ctaggaaactagaccaactg G/A cagtactagaaatcttttta	3095
ALDH1A2	51	intron4+290	cattgtgctagattaggttc T/C gggtaggtatgaaggggca	3096
ALDH1A2	52	intron4+380	ctccttgcctcccgaaaca T/C ataagatctactctttggaa	3097
ALDH1A2	53	intron4+461	gattatggctgattttcagt G/T tcttttttaatttttctct	3098
ALDH1A2	54	intron4+506	tctatatttctcgaacggcc G/A tgaattactttcataatcta	3099
ALDH1A2	55	intron4+1952	ttgttcccaactccactgt C/G atttcattattaaaaaca	3100
ALDH1A2	56	intron4+2079	ctctatttggcctaaccgta C/T cttggttttcttttacttcc	3101
ALDH1A2	57	intron4+2519	ttgggtcataagagctctct C/G catgggtgtctcaacagatg	3102
ALDH1A2	58	intron4+ (2840-2851)	tttgtctctgcatactggc (T)11-13 cacagtgaagcttggaaat	3103
ALDH1A2	59	intron4+7231	aataggatatacaatacaca A/T gatagtgattcagatcctaa	3104
ALDH1A2	60	intron4+7958	taaaatcgtttttattgtta C/T taggtatataaaatttgcta	3105
ALDH1A2	61	intron4+8090	tctgattttatcactgttta C/T agattgcttagtcatactca	3106
ALDH1A2	62	intron4+12823	tgtagcctgtagctaaagt C/T ttttcaaatatgtgaacgt	3107
ALDH1A2	63	intron4+12939	atgaggtccgacttttaaga T/C tttgtctacattttctcc	3108
ALDH1A2	64	intron4+14935	tattgatggagtctcttttta T/G aaatggacttttacccttct	3109
ALDH1A2	65	intron4+15321	gcatttgggtgtctgagaga C/T atatccagaaatagtcatg	3110
ALDH1A2	66	intron4+15412	tttcaagtttatttctgttt T/G ttttttttttttttttttt	3111
ALDH1A2	67	intron5+1888	aatccaaacatctgacttt G/T tagtgacaagatttatgtc	3112
ALDH1A2	68	intron7+9166	gaaaagctactttattcaaa G/A ataaaagtatttttaaaaa	3113
ALDH1A2	69	intron7+9914	aagctggagaaaatactagg C/T tttcctcaacagtgatttcc	3114

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ALDH1A2	70	intron7+18942	tttggaggggaactaatccc G/A tgacttttaggttatctctt	3115
ALDH1A2	71	intron7+19820	ttcaccctcatcttaggtt A/G gggaggtggttgcacag	3116
ALDH1A2	72	intron7+19826	cctcatcttaggttagggga G/A gtggttgcacagtttag	3117
ALDH1A2	73	intron7+19913	cgtgaatcattcagttat A/G tttaaaatcaccgtttgaa	3118
ALDH1A2	74	intron7+ (20110-20111)	catgatttattctctaacta (ACTA) tgctaagtcasagattctgc	3119
ALDH1A2	74	intron7+ (20110-20111)	catgatttattctctaacta tgctaagtcasagattctgc	3120
ALDH1A2	75	intron7+21857	acaatgaaatataagaagg A/T gaagagggagaagcagaga	3121
ALDH1A2	76	intron7+21929	tacaagacacaggcatctt A/G actagtttactgggtctct	3122
ALDH1A2	77	intron7+23308	ggctttgacttcggaaacct G/T tgggtatacaaaagtactg	3123
ALDH1A2	78	intron7+23554	gacettgggtgaaaaccagg C/T tgttaggagtgctcgtgcc	3124
ALDH1A2	79	intron7+ (23701-23703)	catctgagatttgccttgg G/G/Δ ttaccaggttagtgggtgc	3125
ALDH1A2	80	intron7+26479	gatacatgaacaatttggtt T/C atcctcatgatattcttcaa	3126
ALDH1A2	81	intron7+26561	taaagggccacaatgcagta T/C tgaactctcagttacattt	3127
ALDH1A2	82	intron7+26662	tttcttagtctcctcatca C/T gaaactaaagctgtcttcca	3128
ALDH1A2	83	intron8+76	tttatatctccactttttag G/A ggacactagcaaaagatatt	3129
ALDH1A2	84	intron8+ (700-711)	accatctcattcagtgattc (T) 11-12 cctccacttgttgcaggc	3130
ALDH1A2	85	intron8+724	tttttttccctccacttgt T/C gccaggcagagctgctttcc	3131
ALDH1A2	86	intron8+800	cagatttcttgaatttcagc C/A ccagcttggaaatttgcagag	3132
ALDH1A2	87	intron8+1251	gatttctgtgaaaattgaga G/A gatctggcaacctggggctc	3133
ALDH1A2	88	intron8+1627	ggccctcccccaggcaaac G/A gtgagaacatggctgtttcc	3134
ALDH1A2	89	exon9+141	tggagcgggccaagggggc G/A tagtggggagtcctttgac	3135
ALDH1A2	90	intron9+778	aaccagcttgacagatccc T/C tgtagcttggaaagttag	3136
ALDH1A2	91	intron9+801	tagcttgtgaaagttagga G/A gtgaaggctggctcacttc	3137
ALDH1A2	92	intron9+868	ctgaaggcctcgtgactt T/C agtgggtggggaggccac	3138
ALDH1A2	93	intron9+1338	aatttttgcctctttttact A/G tcaatacaactgtctaagtt	3139
ALDH1A2	94	intron10+ (227-229)	ctatgtcttattgattatta TTA/Δ gccaacagacaactcagaat	3140
ALDH1A2	95	intron10+316	ctaaatgtgggtcactggga T/C gtttaaccaggagagagaatc	3141
ALDH1A2	96	intron10+368	ctttacatctgtgcaagaga G/A ggacaaggagcaaatcagcc	3142
ALDH1A2	97	intron10+660	gtaaacttgcattgaaatgt G/A gaaagcaggttaaggatga	3143
ALDH1A2	98	intron11+104	tggggaataccaaaagcaac C/T aaagtaccagaaaaagggg	3144
ALDH1A2	99	intron11+229	aaacttctaaaagaataacc A/G tccagtcagattatgtgct	3145
ALDH1A2	100	intron12+117	catatctcaacaacaactt C/T gtggagcacatgctactata	3146
ALDH1A2	101	intron12+691	gatagggaagatcactgtga A/G ctggaaaaatctgggaacc	3147
ALDH1A2	102	intron12+1934	catcttcttagattgcatg T/C ttgtttgtttgtttgtctct	3148
ALDH1A2	103	intron12+1973	ctacttacccccacaaacatg T/A ttctctttcttaaatgacc	3149
ALDH1A2	104	intron12+2722	ccagagtgcactcagttatc C/A tcaactgccagggccacag	3150
ALDH1A2	105	intron12+3855	cacttgaagcaaccataat T/C gtgaggtttctgatgctgta	3151
ALDH1A2	106	intron12+4185	ttgttttaagcgaatgaac T/C atacggacaggagaacagcc	3152
ALDH1A2	107	intron12+4991	acaggaacacttagacatgc A/G acccactcccacccctccgc	3153
ALDH1A2	108	intron12+ (5018-5019)	cccaccctccgtcttggggg (G) aggaagacactactgtcc	3154
ALDH1A2	108	intron12+ (5018-5019)	cccaccctccgtcttggggg aggaagacactactgtcc	3155
ALDH1A2	109	intron12+ (5051-5052)	actgtcccaagaactaata (A) ctgaaccagtgctgccttgt	3156
ALDH1A2	109	intron12+ (5051-5052)	actgtcccaagaactaata ctgaaccagtgctgccttgt	3157
ALDH1A2	110	intron12+ (5300-5302)	ttaaagttttaaaaaactt CCT/Δ taaaaactactcatgagatg	3158
ALDH1A2	111	intron12+5405	catccaggacttgcgtgttc G/C caggtgataaactgcacctc	3159
ALDH1A2	112	intron12+5435	aactgcacctcccaggact C/A ccgctgcactcacatgcagc	3160
ALDH1A2	113	3' flanking+449	tttgggcccgggaacaatttt T/C caaggttgaagccaaatt	3161
ALDH1A2	114	3' flanking+597	acctgggatttctctgacc A/C atctgtttttctttaccga	3162
ALDH1A2	115	3' flanking+669	atagagactggaagtcatca T/C gtgcagttcaccgtttctga	3163
ALDH1A2	116	3' flanking+1122	ctgtctccactgagctcctc T/G gtcacacccattcttgccc	3164
ALDH1A2	117	3' flanking+2214	tgcagctgtaaaaagaatc T/C gtaaatgttgaccgtactac	3165
ALDH1A3	1	5' flanking-1425	cagtgtagccagccgatat C/T ggtcaaggctgcccgcctcg	3166
ALDH1A3	2	5' flanking-1379	ccattatcccttttcccgg C/T ctcagctgtgcatccaggc	3167
ALDH1A3	3	5' flanking-1270	aacttaccctctatccagc T/A ctatccagaaggacaccagg	3168
ALDH1A3	4	5' flanking- (1214-1213)	acggaggccctcaaaacagga (GG) aataaaggagaccctccccc	3169
ALDH1A3	4	5' flanking- (1214-1213)	acggaggccctcaaaacagga aataaaggagaccctccccc	3170
ALDH1A3	5	5' flanking-1103	gcacagcttttgcaggagt C/T cgtgcctccggtctttgttc	3171
ALDH1A3	6	intron1+986	gccttaactttcccacact T/G ggcttctcttattttgtct	3172
ALDH1A3	7	intron1+1462	gtacaggatttcaaaatact G/A tatatagaaccagacagta	3173
ALDH1A3	8	intron1+1661	cctgttcttgggtgggtgc G/A caacctttgcagttaaagg	3174
ALDH1A3	9	intron1+2360	agaggtatagaatccctctt A/G atttagaggccctcttctt	3175
ALDH1A3	10	intron1+2516	tgaacacatattctttttga G/A tttagctgagtgccctgttg	3176
ALDH1A3	11	intron1+2624	cctgagacaccttacagctc C/T gtccctgcttccatgtcattc	3177
ALDH1A3	12	intron1+3255	tttcatctttctacaattgg G/C ccccttctcctggctgcact	3178
ALDH1A3	13	intron1+ (3643-3656)	gcttcaggaggtttttgtggg (T) 12-14 acaattctatcaacttttaa	3179
ALDH1A3	14	intron1+4265	ccaaaagccctctcttttaa T/C atgacatttaataagacaatt	3180
ALDH1A3	15	intron1+5187	caagatggataagacgtcac C/T taaggctcttagcatgttga	3181
ALDH1A3	16	intron2+43	ctctaagtaattcaattatg G/T atgacaaaggataaggaaa	3182
ALDH1A3	17	intron2+127	caggccctgggtagctcgg T/C gaattggcatgtgtttctca	3183
ALDH1A3	18	intron2+ (285-300)	aggaaaggttttcttttttc (T) 16-17 atcaattatttgacctgga	3184
ALDH1A3	19	intron2+778	cgtgtgcagagtaggcttgg A/G ttttatcttgcctatgagtt	3185
ALDH1A3	20	intron2+1216	actcgttagagtagctactcct G/C ctgggttccacatccactc	3186
ALDH1A3	21	intron3+81	accatgggtatgggaaaa A/C gatcacggctcctgttttgt	3187
ALDH1A3	22	intron3+236	gctcagcttctgaccaagt T/G gttgtctataggcagttgag	3188
ALDH1A3	23	intron3+1467	ggcccggtttagggggagg G/T atctcctttctggcctttga	3189
ALDH1A3	24	intron3+1725	ccacatgttccccgggtgag A/G gtacgtccctccacgggttaa	3190
ALDH1A3	25	intron3+3777	gccagaagtagatgccccc A/G ttacgtgtgtcattactgg	3191
ALDH1A3	26	intron3+3829	caagtcactgggcccgttagc G/C tccgtgctgcaccttgaag	3192
ALDH1A3	27	intron3+4299	tcactttccacagccacact G/A gccagcctggccgagaagga	3193
ALDH1A3	28	intron4+84	agagcccccctgactgttt C/G cctaaggcaccattccaac	3194
ALDH1A3	29	intron4+126	ccactccctctcaaatgtt A/G ctgccaattcttctttaa	3195
ALDH1A3	30	intron6+ (290-291)	tagagaattttcaggggggg (G) tcaaccaaggaggagccaaa	3196
ALDH1A3	30	intron6+ (290-291)	tagagaattttcaggggggg tcaaccaaggaggagccaaa	3197
ALDH1A3	31	intron6+705	aacagctggtgatgagcaa T/G ttccactttcctttgtga	3198
ALDH1A3	32	intron7+56	ggggcgtgttatttgacacc C/T gtgagcttttcccttgacag	3199
ALDH1A3	33	intron7+1107	gatgctgttactctcttgg A/G gacagacactgcccttgga	3200
ALDH1A3	34	intron7+1610	aagagccacacagaccacc C/G cctactgggctgttggat	3201



Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ALDH1A3	35	intron7+1820	cacctgtaagtggagcgct T/C agaccaaggatcccaggatg	3202
ALDH1A3	36	intron8+963	gagaaaggacagggaggga C/T acaggctctcagggaaggaaa	3203
ALDH1A3	37	intron8+1824	accatttattatccactaagc G/A tgcctcccaagatcttattc	3204
ALDH1A3	38	intron8+2384	cgctccctcgccctccccc C/A tccagtggactggcagtg	3205
ALDH1A3	39	intron9+24	atccccctgggtgtgtgaa A/C ccatgtgtgtgtctagggg	3206
ALDH1A3	40	intron9+91	gcctacagggttccctctccg T/C gaaaggaaatgctgacctgc	3207
ALDH1A3	41	intron9+219	actgaggcatggggaggagg C/G gctattccagggcagaagg	3208
ALDH1A3	42	intron9+435	ccagacggagagagcctggg G/A caggagaatgtatctccagg	3209
ALDH1A3	43	intron9+1472	ttgacttttgaggccagata C/T accgattttctccaaggaaa	3210
ALDH1A3	44	intron9+2038	taaacatgtgttctactcg G/A ctctccaggagtggtgggt	3211
ALDH1A3	45	intron9+2124	caaacagggtctgccagatg G/A catatgccacgacgacggg	3212
ALDH1A3	46	intron9+2154	agcagccaggaggagacctgc C/G gttggcgaaagccctgtgt	3213
ALDH1A3	47	intron9+2197	cttttgccctcaggagg G/A gaagagcagctcagcagcat	3214
ALDH1A3	48	intron9+2466	ttcttagttctcatgtttc C/T ctctagaatgttttctgtgt	3215
ALDH1A3	49	intron9+3655	gatttgtaagtggcatgca C/T ggtttatgccctctctcctg	3216
ALDH1A3	50	intron9+3954	gggtgcgttttgacaactg C/G tcagtagctgttcacaagc	3217
ALDH1A3	51	exon10+88	tggaaatcgggggcctcagcc C/A tggaaagacaagggtcttc	3218
ALDH1A3	52	intron10+8	tgccaaagaggaggtacaag G/A gggctgtggcaaggctacga	3219
ALDH1A3	53	intron10+307	ctctctgattttctaacaca A/C ccggtccccgagtcagtc	3220
ALDH1A3	54	intron10+378	gtgggttttgccaggaaatca G/A ttcaagaacctgtgattca	3221
ALDH1A3	55	intron10+975	aatattgtgtcatctctcc C/G ctggtagtattatggaagac	3222
ALDH1A3	56	intron10+1088	cagtgccaggagccaggggg C/T ctctccagatgactctgag	3223
ALDH1A3	57	intron11+105	ttgtttacattgtatattat A/G taccagccctgtctcagtg	3224
ALDH1A3	58	intron11+274	agggtccagttacctgtgcc T/G gtggccctgtgtgtactg	3225
ALDH1A3	59	intron11+1088	cagtgccaggagccaggggg T/A ctctccagatgactctgag	3226
ALDH1A3	60	intron12+96	ctccaatctgtgacacccc G/A tccccccacaccgccctc	3227
ALDH1A3	61	intron12+5642	tctgtgtaactgtctgttc T/C ctcatgccccctaggctggc	3228
ALDH1A3	62	exon13+104	gggctctctctcaaacatc G/C gacggcggaatgtggcagat	3229
ALDH1A3	63	exon13+281	atagggtgtctgtgaatcg C/T agtctgtccctgggaggag	3230
ALDH1A3	64	3' flanking+743	gtgagcaggaaactgtaggga G/A aagatatatttccctcattt	3231
ALDH1A3	65	3' flanking+1145	gcctccagctacccccccc A/G cctcaggagggtcattcca	3232
ALDH1A3	66	3' flanking+1185	aacctagggtgtctgagaatc T/C ggggtggattaccagcaaaa	3233
ALDH1A3	67	3' flanking+1600	acaccacgccctgcacaaatg T/C tgggaactgtcgttgccaa	3234
ALDH1A3	68	3' flanking+1847	caggagccctgcggctgccc C/G ggttctgtgaatggcagtg	3235
ALDH1L1	1	intron1+252	cgacgcccaggagctggccc G/C ccgaggatctggccggccgc	3236
ALDH1L1	2	intron1+544	ctcaggggctgcgtggagt C/T ccagctccagccactgcgt	3237
ALDH1L1	3	intron1-6596	cagattttttttaagtgca C/G tagccaactgaggatattttt	3238
ALDH1L1	4	intron1-6513	caattatggtttatcttagg G/A acatgtttatagagatagta	3239
ALDH1L1	5	intron1-6478	atagtatttacttactagct G/A cattctaattttgttccct	3240
ALDH1L1	6	intron2+240	gtggcattagggtctctggag A/G agggctatagagaagccag	3241
ALDH1L1	7	intron2+1326	gaggagagagaccggaggaga G/C agccagtcagtcaggcccc	3242
ALDH1L1	8	intron3+386	gtcctactctaacttccact G/A ccgtgtctctggcagcaca	3243
ALDH1L1	9	intron4+271	gggcccgttcaatagacaag G/C aaggctaaaggcaggactg	3244
ALDH1L1	10	intron4+356	taggattctatttctctctc C/T ttcaactgtgtattctcctt	3245
ALDH1L1	11	intron4+608	gtgctctgataggctgtctc G/A gtacacatgctctctgtgg	3246
ALDH1L1	12	intron4+664	ggtcacatggcctgagcgcc G/A gggcggtcagtcacctggg	3247
ALDH1L1	13	intron4+785	gagggtcgttggccctgcc C/G gaggacaggctggcaggag	3248
ALDH1L1	14	intron4+874	ccctggggagcccttgcgt T/G tggcgccagcagggaagca	3249
ALDH1L1	15	intron4+1349	tcctcaggctcttgcctac G/A tggggccagactccttggct	3250
ALDH1L1	16	intron4+1799	ctggggctgggaaggaggca G/A ggtcctattgtctgggatag	3251
ALDH1L1	17	intron4+1815	ggcagggtcctattgtctgg G/A atagcaaccactggtatctc	3252
ALDH1L1	18	intron5+272	aaagccacagggagataag A/G gtgggagttaggggcctaaa	3253
ALDH1L1	19	intron5+301	tagggggcaaaacgtacgcc G/A tagtgcaggcagctctcaag	3254
ALDH1L1	20	intron5+343	caagggtgagggaacatgc G/A ggtctctggagcaatagcca	3255
ALDH1L1	21	intron6+926	cctgcctgggctactgctt C/T gggggcttcttctcaccac	3256
ALDH1L1	22	exon7+41	aacgtgaacacttcaggcc T/C ggtgccggaggagacgtt	3257
ALDH1L1	23	intron7+305	cctagaatcagagagaagcc C/T tccaggaggcctgggttca	3258
ALDH1L1	24	intron7+837	gtccggacaaacccatggg C/T gtggtaacccagccgtgtt	3259
ALDH1L1	25	intron7+866	ccagccgtgttgcgtgtc C/T ggcctaccagagtgaggct	3260
ALDH1L1	26	intron7+884	tcggcctaccagagtgagg C/T gtggcagtatgggcttggc	3261
ALDH1L1	27	intron7+1118	aatgttccagaaatcatgc G/C aggcagtaaggccagaggaa	3262
ALDH1L1	28	intron7+1168	aaagttaaaggttcaggagaa G/A tctagcctgggctgtctcc	3263
ALDH1L1	29	intron7+1451	cagggaaccacagcatctg T/C ccagagacctgcaagacag	3264
ALDH1L1	30	intron7+1489	caggaatgcaaaagagcaa T/C taagtgtcttaagaggaagc	3265
ALDH1L1	31	intron7+1579	tcagggtgggaggagtgga G/A gagagaccagctgagcacac	3266
ALDH1L1	32	intron7+1691	ctggctgggctttagcttgc A/C gaaagctccagaaatcttt	3267
ALDH1L1	33	intron8+2627	aaagaggagagccgggggtg C/T ttgtccagggttggggga	3268
ALDH1L1	34	intron8+2646	gcttgtccagggttgggg G/A aactgttctgattgggct	3269
ALDH1L1	35	intron8+2925	ctgctgccctccatagttcc C/G agactgaactcttcagagg	3270
ALDH1L1	36	exon9+4	cagggttctgtttgcagagt G/T ttggcagcggatctctccc	3271
ALDH1L1	37	exon10+109	cagctgttagtgaggaaagt G/T cagggggacagatgaggagg	3272
ALDH1L1	38	intron10+ (671-672)	tgccattttctctgtctga (AG) gtctcttagtcccaacctaa	3273
ALDH1L1	38	intron10+ (671-672)	tgccattttctctgtctga gtctcttagtcccaacctaa	3274
ALDH1L1	39	intron11+8	caccgatggagtgtagtg C/A agggccagcaacctctctcc	3275
ALDH1L1	40	intron11+447	atgagccaaagcagccctat G/A gtatgatcacacgtgaacat	3276
ALDH1L1	41	intron11+601	ctcaaatgagtcatttgag A/G ggaagttaatgaagactcat	3277
ALDH1L1	42	intron11+639	catctgcgaaggagagagg G/A ggggtaggacacagacagg	3278
ALDH1L1	43	intron12+684	tcctgggagagagaggggt C/T ggcagatagccgagaaaca	3279
ALDH1L1	44	intron12+767	cgtctaggggtgcgaagcca A/G gttatggcattgggtccaac	3280
ALDH1L1	45	intron12+1014	tcataggttccagtcacctt C/T gcaagccctcaattctaga	3281
ALDH1L1	46	intron12+1359	ctggttctgctcagctcag C/T acagcagagctgggtctag	3282
ALDH1L1	47	intron12+1734	ggtgtccaggctgctgtgtg G/T tcagtagggccggccagcc	3283
ALDH1L1	48	intron12+1901	ttcagcagcctaactgaatt G/A acaatagaatgtcctgcaa	3284
ALDH1L1	49	intron12-470	gggatggggccacctctoca T/C ctctggagatgccaggctca	3285
ALDH1L1	50	intron12-334	aaggccagcctcttgggcca T/C gaccccttggctgtctgag	3286
ALDH1L1	51	intron12-325	ctcttgggcatgaccctt T/C gctgtctcagcagtggt	3287
ALDH1L1	52	intron12-221	gaaggaaagcagggaagatc G/C aggaagagagagggacag	3288

Table 1

JP2001-256862

Designation of Gene	No.	Location	Sequence	SEQ ID NO
ALDH1L1	53	intron12-4	cccgcttccctccacctgg T/C cagggtggcagatctcatgg	3289
ALDH1L1	54	intron13+34	tcccacccagtgtagcaca T/C gcagactggccagccatat	3290
ALDH1L1	55	intron13+58	gactggccagccatatagg A/G gaactccaaggccagcacag	3291
ALDH1L1	56	intron13+125	ccacaactggtgcttggaa T/C gacacctgtttattagcttg	3292
ALDH1L1	57	intron13+126	cacaactggtgcttggaa G/A acacctgtttattagcttgt	3293
ALDH1L1	58	intron13+281	acctgcatccagacaggttc T/G ggtgttgacagagttcagtt	3294
ALDH1L1	59	intron13+299	tcgggtgttgacagagttca T/C ttccgtgtgagtcagggtc	3295
ALDH1L1	60	intron14+121	cattttcaaacagccatcc A/G tgtgtctttgagcacctgc	3296
ALDH1L1	61	intron14+167	gccaggcattgtgttaagga C/T ttgaggacaattgtatttaa	3297
ALDH1L1	62	intron14+205	taatctccagtaaacactgg A/C tcagtcagggtccacggtggg	3298
ALDH1L1	63	intron14+219	cactggatcagtcagggtcca C/G ggtgggaaacaagagtaaac	3299
ALDH1L1	64	intron14+2275	ttcctatgtgtatgcattcc T/C cagacctgtgtctccagcct	3300
ALDH1L1	65	intron14+2431	agaatgactgagtgatcaga C/G cttagagagcccagccccgt	3301
ALDH1L1	66	intron14+2660	agccaagcattttctgggga C/T accaagaaccttgtgtgtg	3302
ALDH1L1	67	intron14+2740	aactccacctccagcgtcca T/C gcagctcccaggagcgtca	3303
ALDH1L1	68	intron14+2756	tcctatgcagctcccaggag T/C gtcagagggcagagggggg	3304
ALDH1L1	69	intron14+2805	ccgcacagcaggagagatggc C/C ccaaggagggagggagggg	3305
ALDH1L1	70	intron14+ (3636-3637)	ttctctgggtgtgtgtggg (G) tgtggggcagctcccctatc	3306
ALDH1L1	70	intron14+ (3636-3637)	ttctctgggtgtgtgtggg tgtggggcagctcccctatc	3307
ALDH1L1	71	intron14+4347	tcaggacagaaaacagcagg C/T gtgagctgctctcagaggg	3308
ALDH1L1	72	intron15+380	atgtcccttatgtggttcc A/G agaccagaagtcctggagag	3309
ALDH1L1	73	intron15+ (1055-1056)	gccacaatctgcagctactc C/Δ tccagctgtgtgtgggt	3310
ALDH1L1	73	intron15+ (1055-1056)	gccacaatctgcagctactc tccagctgtgtgtgggt	3311
ALDH1L1	74	intron17+15	gaaaaggtgcgtgctgggg G/C tggagcagaggggggctgc	3312
ALDH1L1	75	intron17+44	aggaggggtgctgtgagtg C/T gcctgggacatggcagtgct	3313
ALDH1L1	76	intron17+51	gctgctgtgagtcgctggg G/A acatggcagtgctgtccaca	3314
ALDH1L1	77	intron17- (2224-2223)	ctgggtgtcatctccagact C/Δ gtcaactaaacacaataga	3315
ALDH1L1	78	intron18+140	agcgtcatcacaagcatagc G/A tggcaggcagcagggttagg	3316
ALDH1L1	79	intron19+ (51-52)	tggttctactgggacagcgc GC/Δ ctgctggaggggttggag	3317
ALDH1L1	80	intron19+399	tcaggtcagcctgggcttga C/A catggacaggggcccggag	3318
ALDH1L1	81	intron19+1794	gtcctgtctgggggtcttaa G/C ggagtcagagacttccaca	3319
ALDH1L1	82	intron19+1969	tgatcggggtgcggtttggg C/G cgacaggacagggagcaga	3320
ALDH1L1	83	intron19+1972	tcgggggtgcggtttggggc A/G caggacagagcagagaata	3321
ALDH1L1	84	intron19+2083	tgagaagacagaggggtgt G/T ccgggtgctcaggtcacacc	3322
ALDH1L1	85	intron19+2119	acacctgtgtctgattagg G/T tgattagggttgacaggttt	3323
ALDH1L1	86	intron20+1388	ttaccctcttccactcccg C/T tggactgtgagttccatgag	3324
ALDH1L1	87	intron20+1564	cccaggaaaccaggaacagtg G/A ggagccatcaccccgccgt	3325
ALDH1L1	88	intron20+1873	tcagtgttaaaacatcatt G/A tttatgtatgaaaaattatg	3326
ALDH1L1	89	intron20+2427	actaggattggatggacttg G/C gatcaggtctcagctctgtc	3327
ALDH1L1	90	intron20+2458	cagctctgtccactgcacac C/T ggccggcccatcttccctcaa	3328
ALDH1L1	91	intron20+2544	ccagggtggagagccatctg C/T agcgtgtgtgacacccatcac	3329
ALDH1L1	92	intron20+2573	gacacccatcacacgggtgc G/C gtgacccggtgtctatgtcg	3330
ALDH1L1	93	intron20+2574	acacccatcacacgggtgcc G/A tgacccggtgtctatgtcg	3331
ALDH1L1	94	exon21+33	agccaactgtttttacagag G/A tggaaagaccacatgttcata	3332
ALDH1L1	95	exon21+87	ccttcgggctgtcatgac A/G tctctcggtttgtgtagggg	3333
ALDH1L1	96	intron21+323	ccatgcattaaacaccccc C/G aacttgaggtggttggaaata	3334
ALDH1L1	97	intron21+361	ataatcagagattttatttta G/C tcacgtgtcaggttcaatga	3335
ALDH1L1	98	intron21+478	gtcttgcggagggttccctc C/A gctgtgcagccctcggggtt	3336
ALDH1L1	99	intron21+1086	caacccaactctgcccccg C/T gctgcagcccgccacatttt	3337
ALDH1L1	100	intron22+235	gggctggaggagacactcc A/C gccaggaggcactgggggcc	3338
ALDH1L1	101	intron22+313	atagcaggaggaggttgccc G/A tgaagaccaggggcccgtg	3339
ALDH1L1	102	intron22+1214	tggcccaacttatgaatcct G/C cccgagttccctcagctccc	3340
ALDH1L1	103	intron22+1226	tgaatcctccccaggttccc T/C cagctccctcctaaccctag	3341
ALDH1L1	104	intron22+1623	gggcttccactgtccaga C/G aaggcgtgggagctgggga	3342
ALDH1L1	105	intron22+1698	attctggggagttcctggccc A/G ctatccactgccagggataa	3343
ALDH1L1	106	3' flanking+145	gagagacagggagaaatggg C/T ggggtcatctcagggcccca	3344
ALDH1L1	107	3' flanking+239	tgggaaacaggtgggaagac G/A gggattgagctgggtgagcc	3345
ALDH1L1	108	3' flanking+288	gggaagcagtcagactccct C/T agcagatggggccggccct	3346
ALDH1L1	109	3' flanking+1513	agggtcggctcagaccccg A/C gtgctcctggcatgtccagc	3347
ALDH1L1	110	3' flanking+1707	cggtgggacttgccttagca C/T gtgccaattataccagaaca	3348
ALDH1L1	111	3' flanking+1709	gtgggacttgccttagcag C/T gccacttataccagaacaga	3349
ALDH1L1	112	3' flanking+1745	acagatgagtcctatgtcaac C/T gcttcttgagttccctttgt	3350
ALDH1L1	113	3' flanking+1843	ctgcctctcagccacagccc G/A ggccgctcacactcctccca	3351
CYP3A4	1	intron2+ (754-763)	cacaaaatgagtttgggg (T) 9-11 acacaaaggcggaatcacat	3352
CYP3A4	2	intron7+258	accactaatcaactttctgc C/T tctatggatttgcctattct	3353
CYP3A4	3	intron7+894	tgctgtatcactgcttag C/T ggtgctccttatgcatagac	3354
CYP3A4	4	exon9+ (32-33)	ttccttcagctgattgattga (A) ctctcagaattcaaaagaaa	3355
CYP3A4	4	exon9+ (32-33)	ttccttcagctgattgattga ctctcagaattcaaaagaaa	3356
CYP3A4	5	intron10+12	cccaataaggtgagtgatg G/A tacatggagaaggaggagg	3357
CYP3A4	6	intron10+459	agacatgtgactttttttt T/Δ gaaagtaacaatcactttc	3358
CYP3A4	7	intron10+608	agccgtctcgaatgtctccc C/T acttcataactcctccacac	3359
CYP3A4	8	intron12+2467	ttttttgccattactccat A/G gagatcagaatatcaactctg	3360

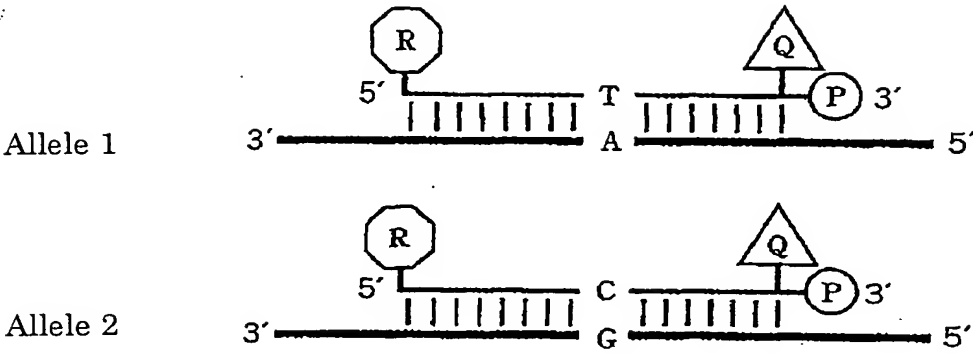


Fig. 2

a. Hybridization



b. PCR Reaction



c. 5' Nuclease Activity

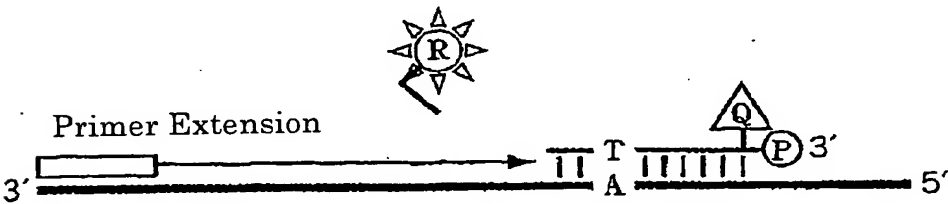


Fig. 3

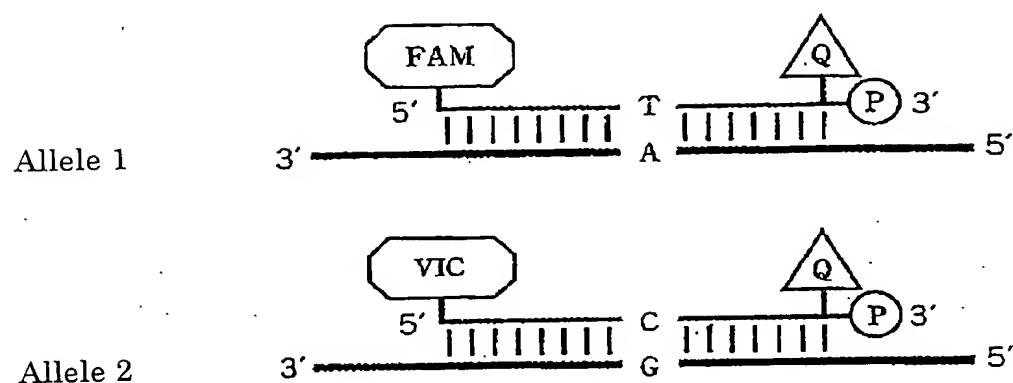
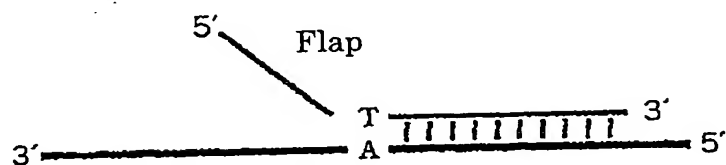


Fig. 4

a. Allele Probe



b. Invader Probe



c. 5' Nuclease Activity

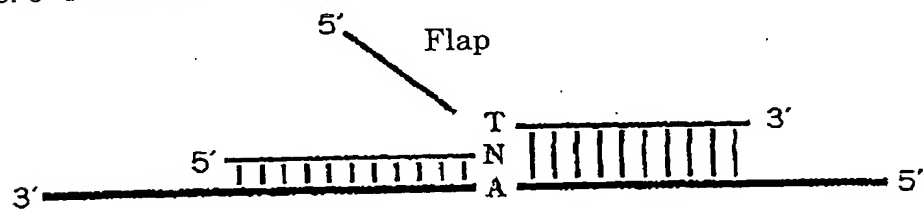


Fig. 5

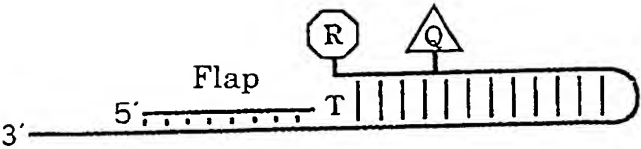
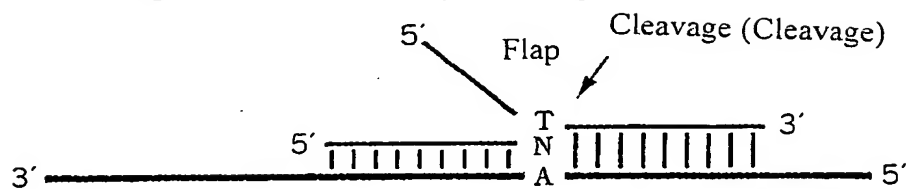
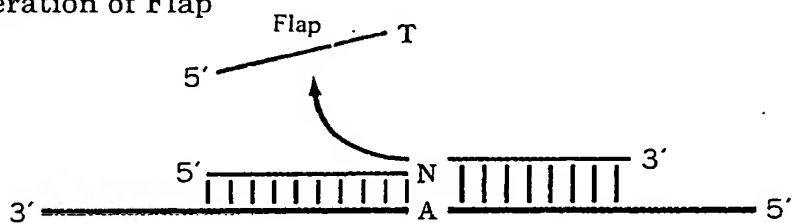


Fig. 6

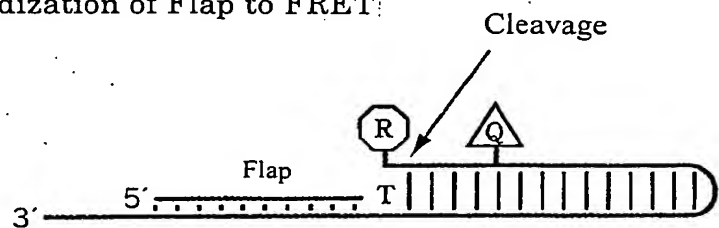
a. Cleavage of Allele Probe by Cleavage



b. Liberation of Flap



c. Hybridization of Flap to FRET:



d. Liberation of Fluorescent Dye

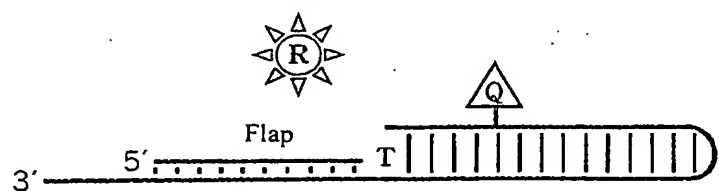


Fig. 7

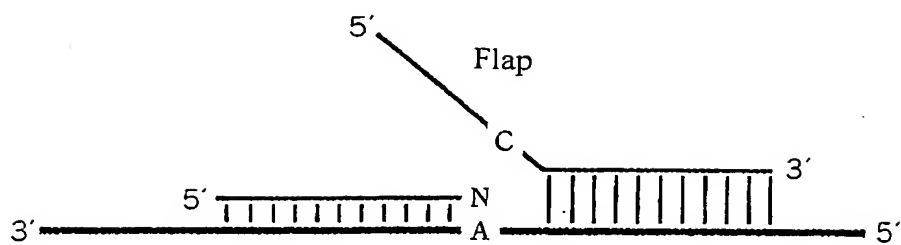


Fig. 8

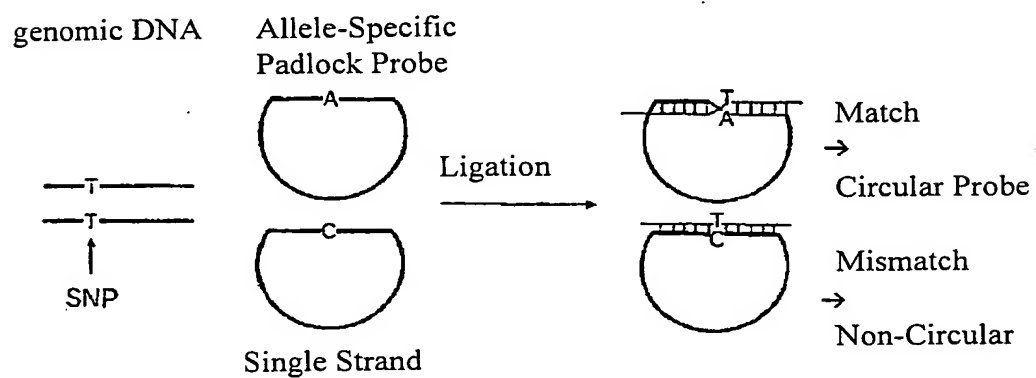
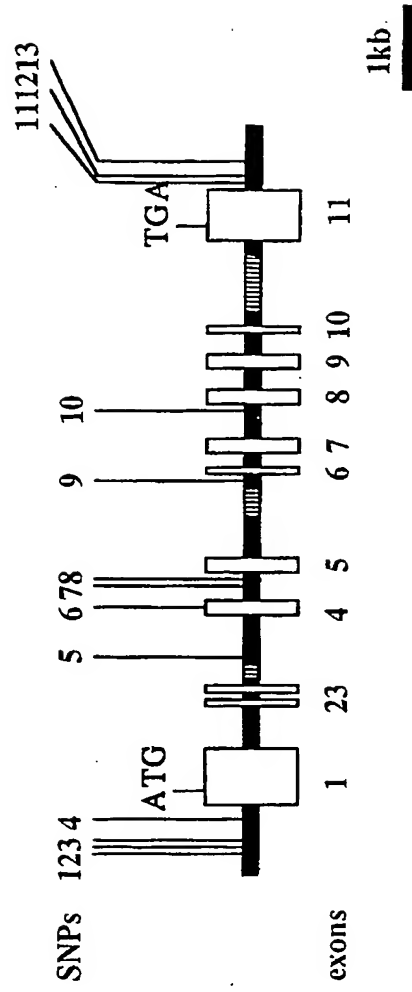


Fig. 9.

*ATP binding cassette, sub-family B, member 2 (ABCB2)*

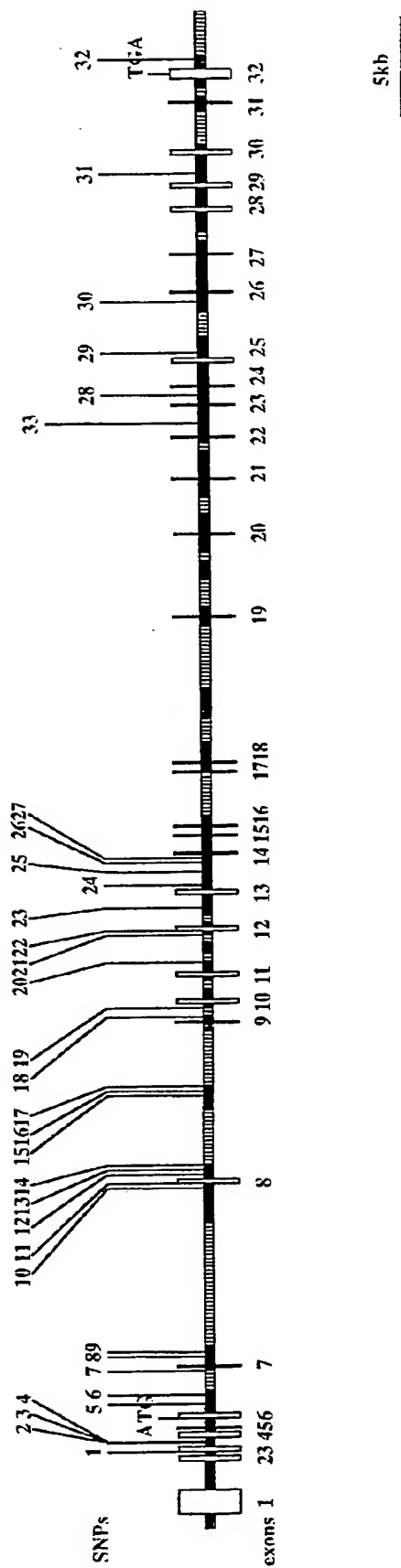
ACCESSION X66401





**ATP-binding cassette, sub-family B, member 4 (ABCB4)**

ACCESSION AC079591  
AC079303  
AC005045



*Epoxide hydrolase 1, microsomal (EPHX1)*

ACCESSION AC058782

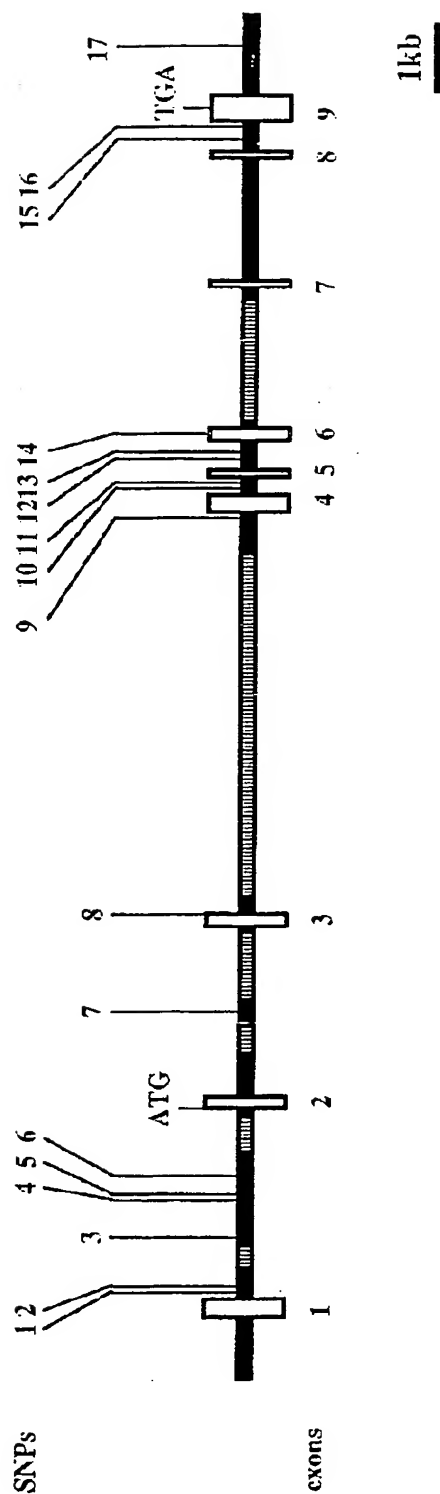
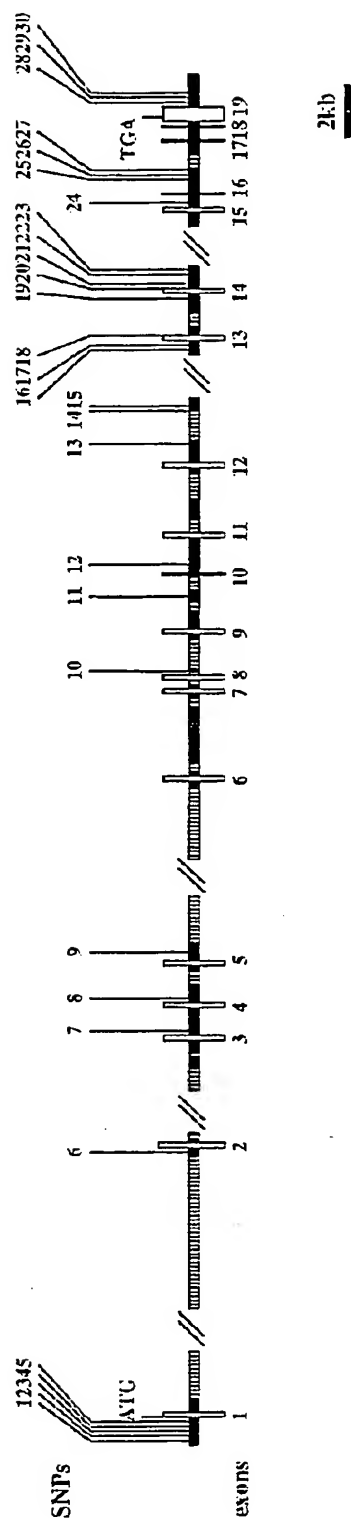


Fig. 11

Fig. 12

*Epoxide hydrolase, cytoplasmic (EPHX2)*

ACCESSION AC010856



*Guanidinoacetate N-methyltransferase (GAMT)*

ACCESSION NT\_000879

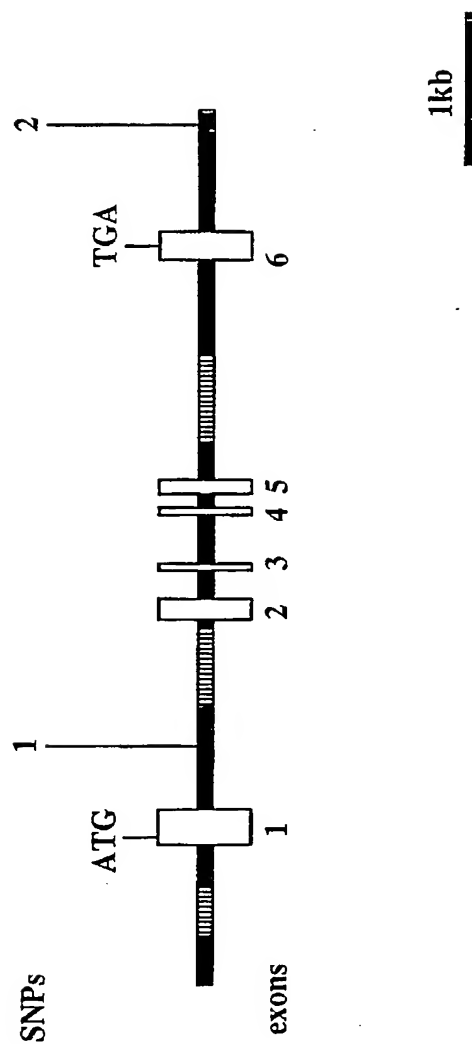
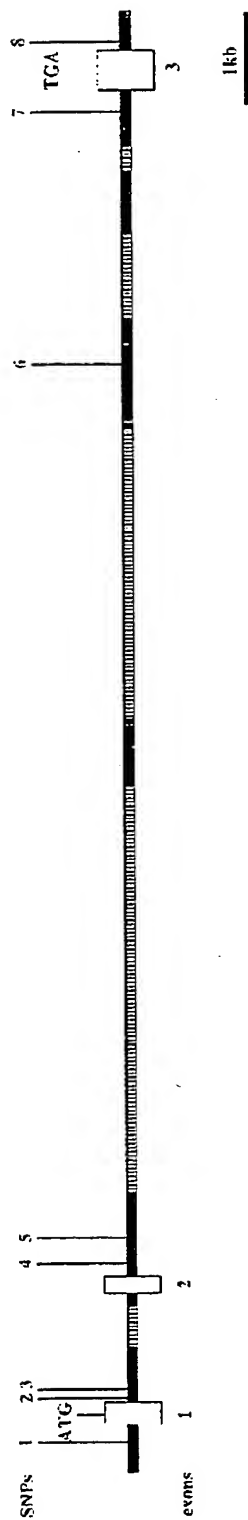


Fig. 14

*Nicotinamide N-methyltransferase (NNMT)*

ACCESSION AC019290



*Phenylethanolamine N-methyltransferase ( PNMT )*

ACCESSION AC040933

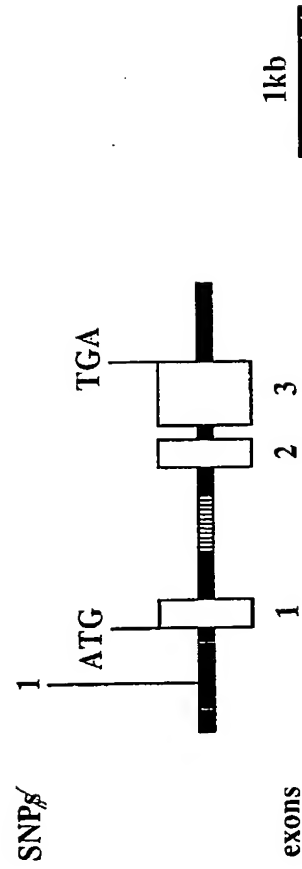


Fig. 15

Fig. 16

*Phosphatidylethanolamine N-methyltransferase (PEMT)*

ACCESSION AC020558

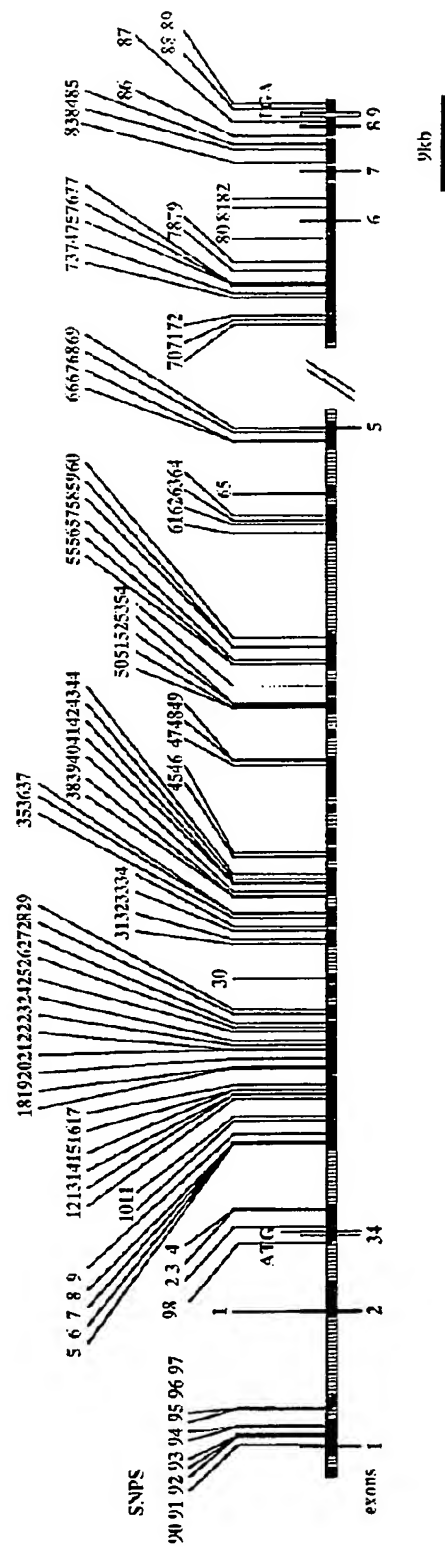


Fig. 17

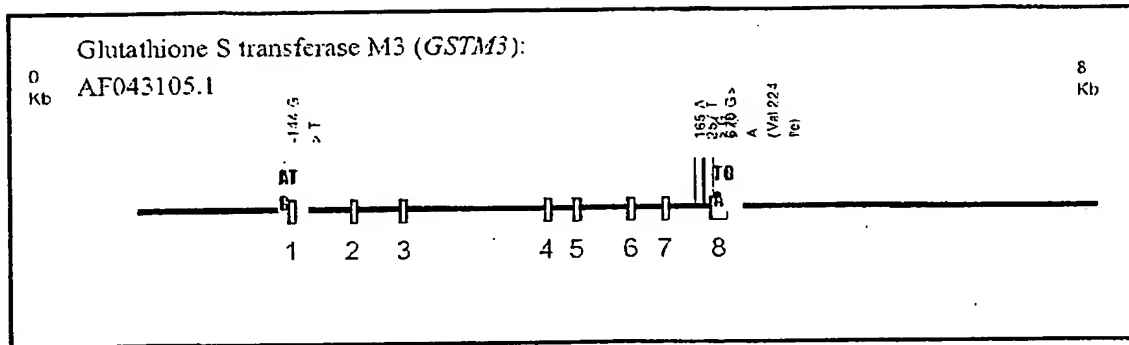


Fig. 18

*Aldehyde dehydrogenase 5 (ALDH5)*

ACCESSION AL135785

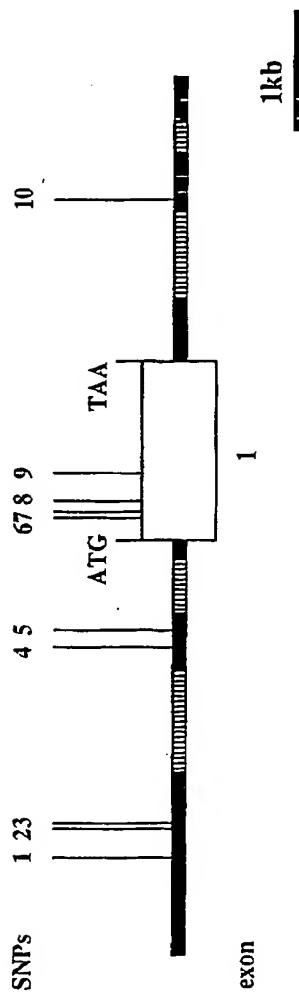




Fig. 19

*Transglutaminase 1 (TGM1)*

ACCESSION M98447

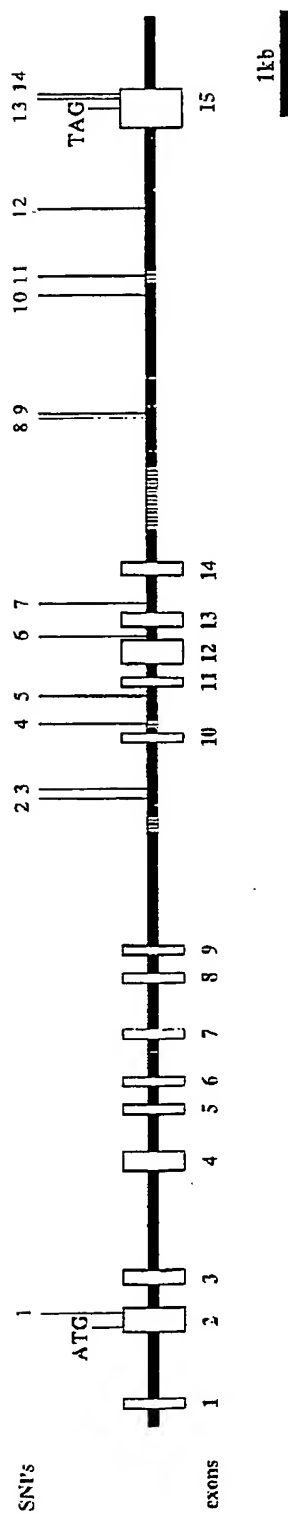


Fig. 20

*Gamma- glutamyltransferase 1 ( GGT1 )*

ACCESSION D87002

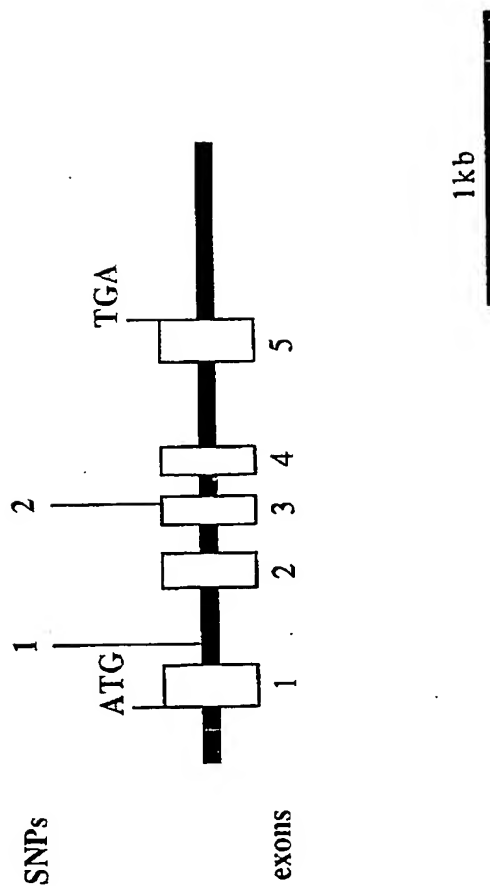


Fig. 21

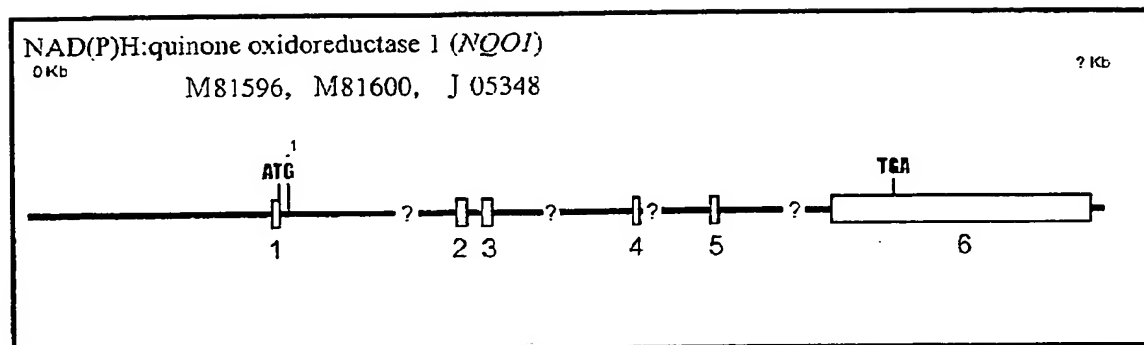


Fig. 22

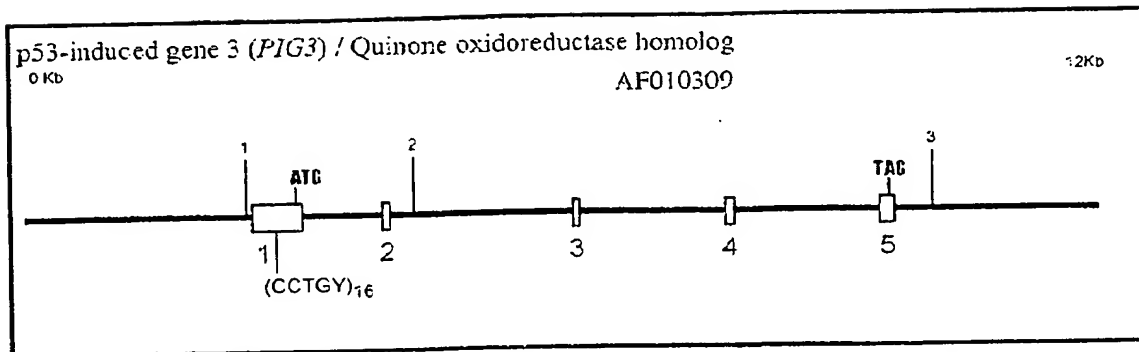


Fig. 23

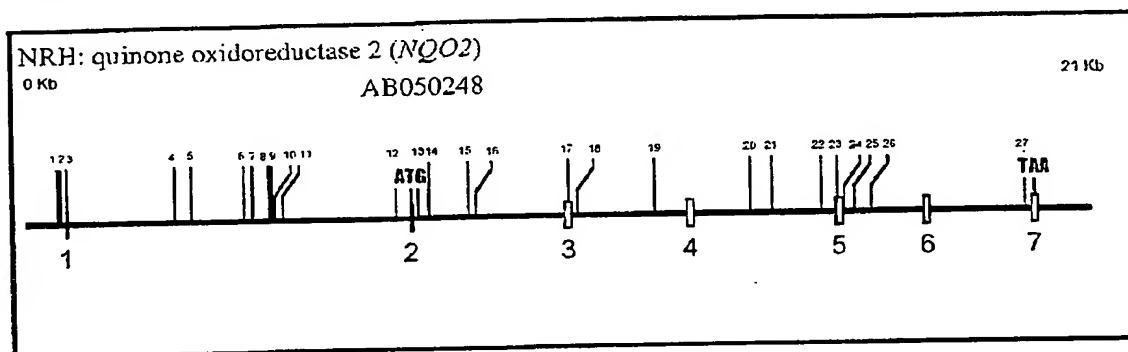


Fig. 24

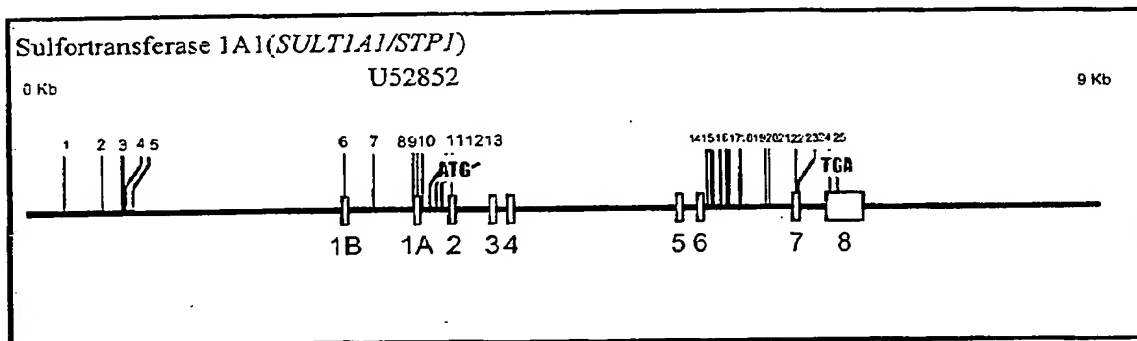


Fig. 25

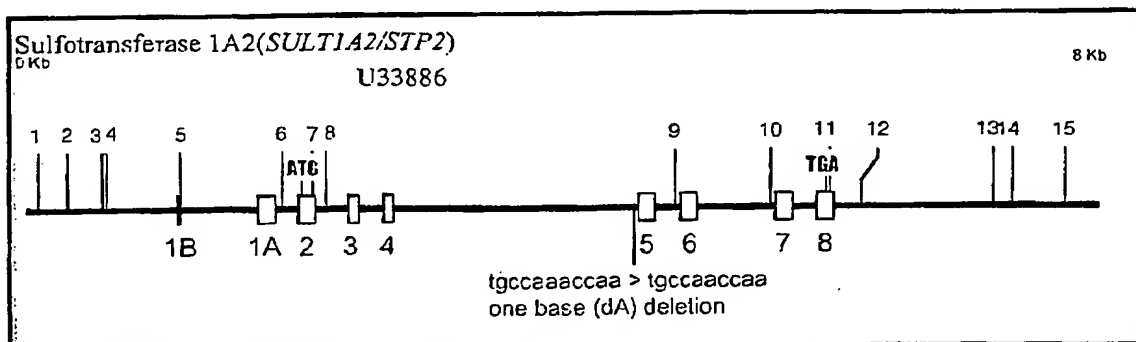


Fig. 26

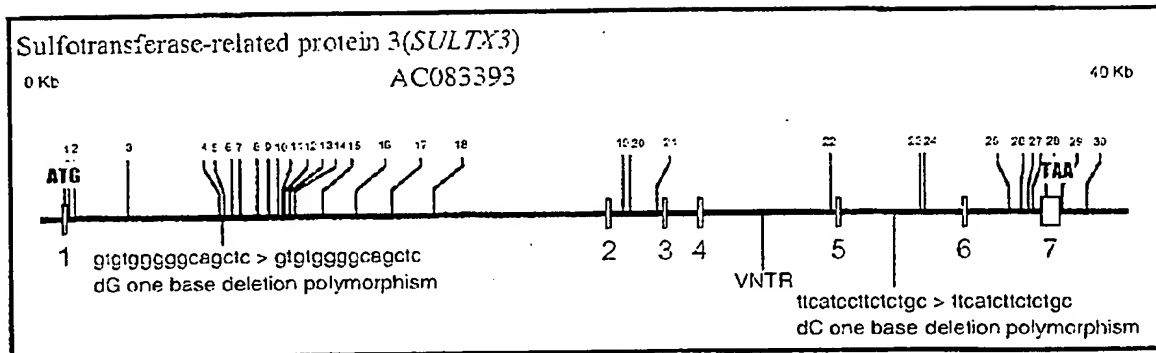


Fig. 27

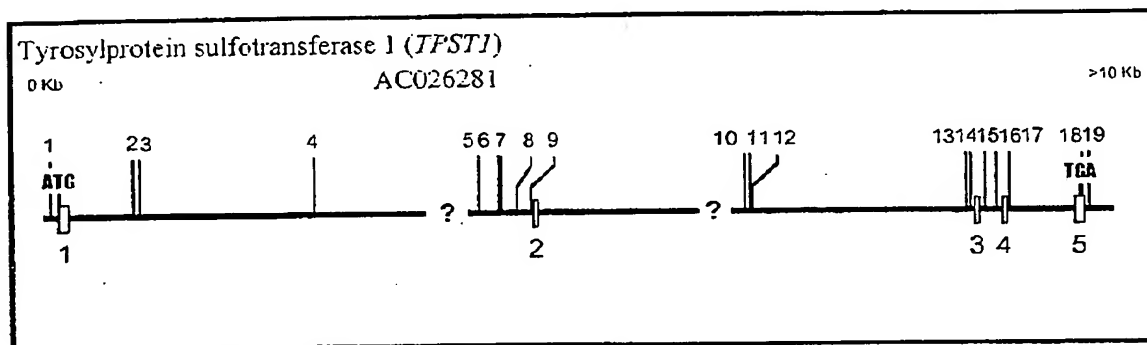


Fig. 28

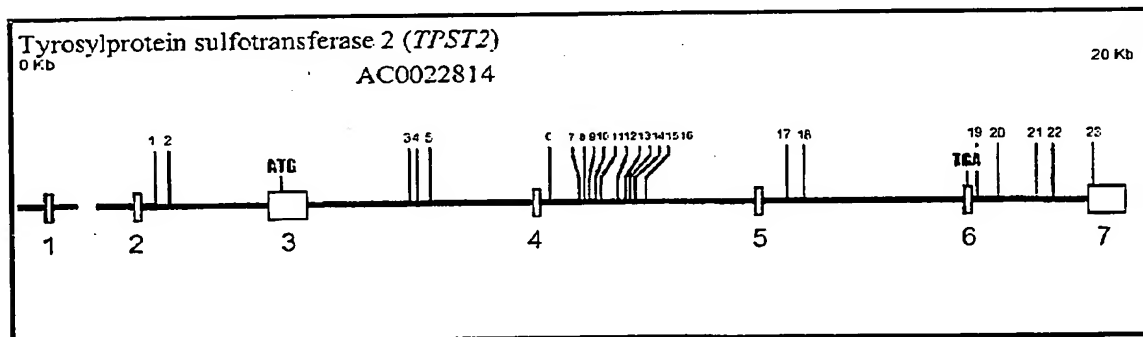


Fig. 29

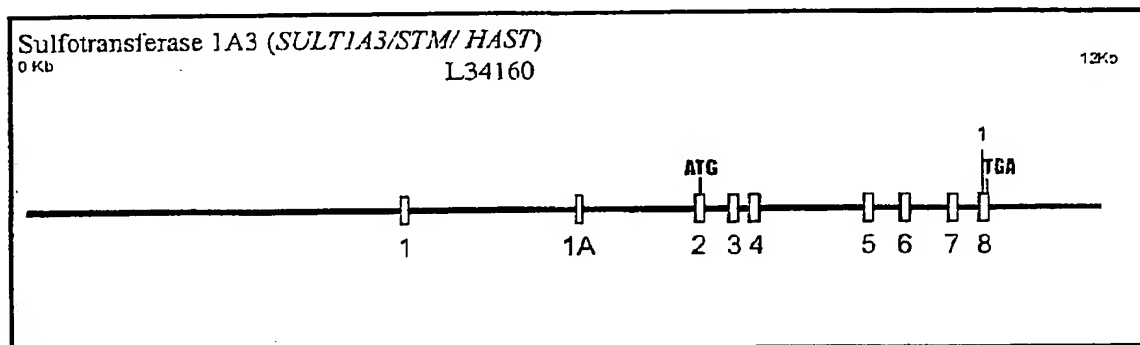


Fig. 30

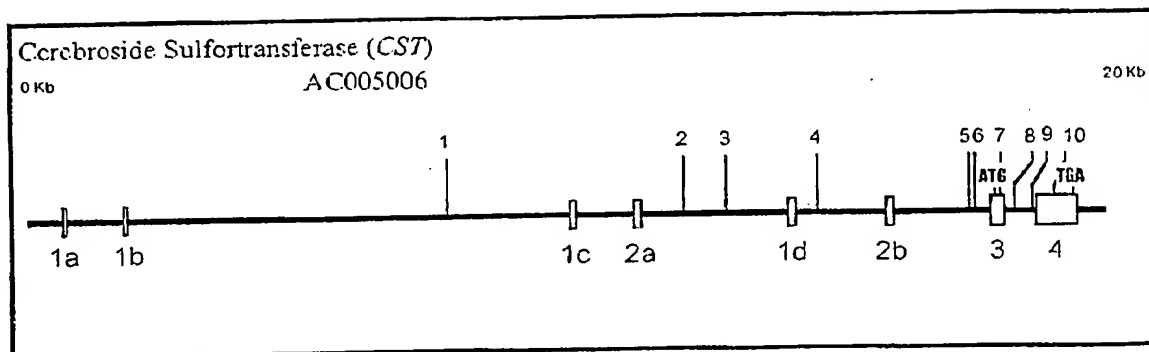


Fig. 31

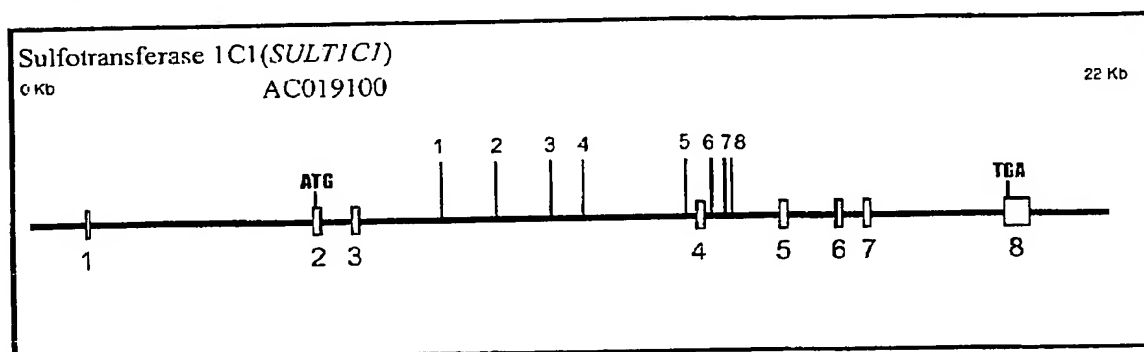


Fig. 32

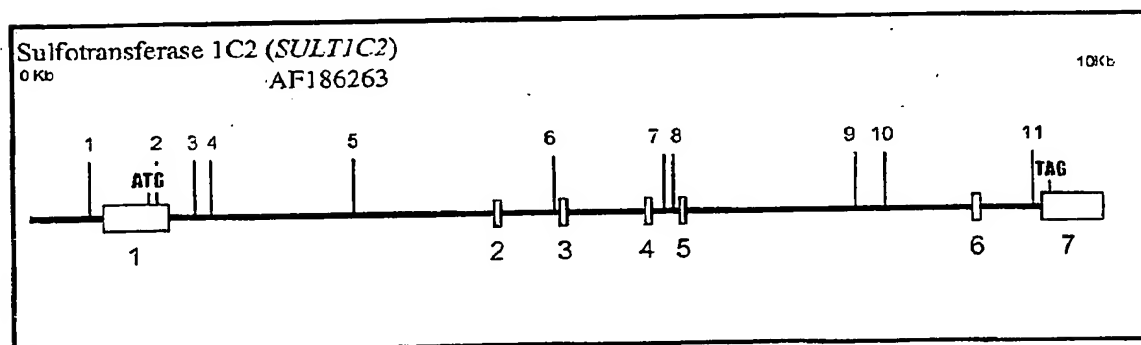


Fig. 33

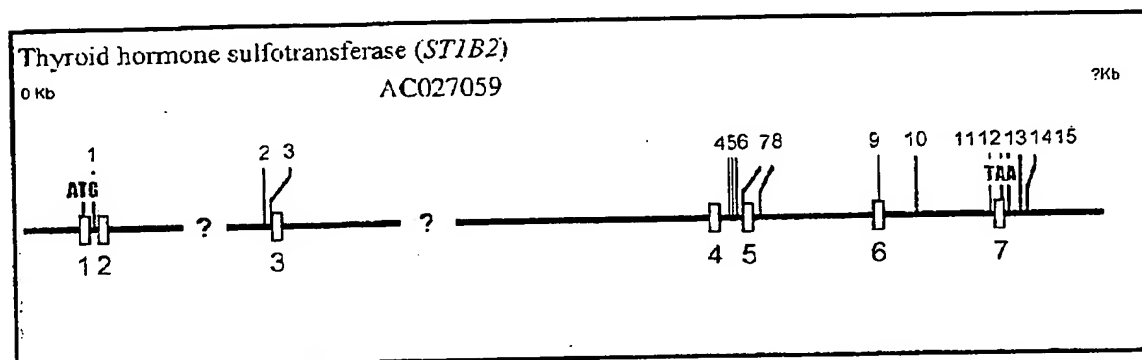


Fig. 34

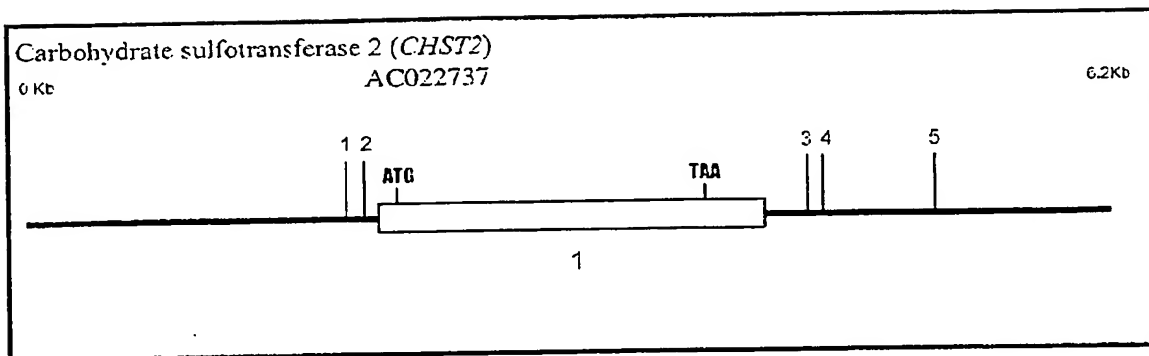


Fig. 35

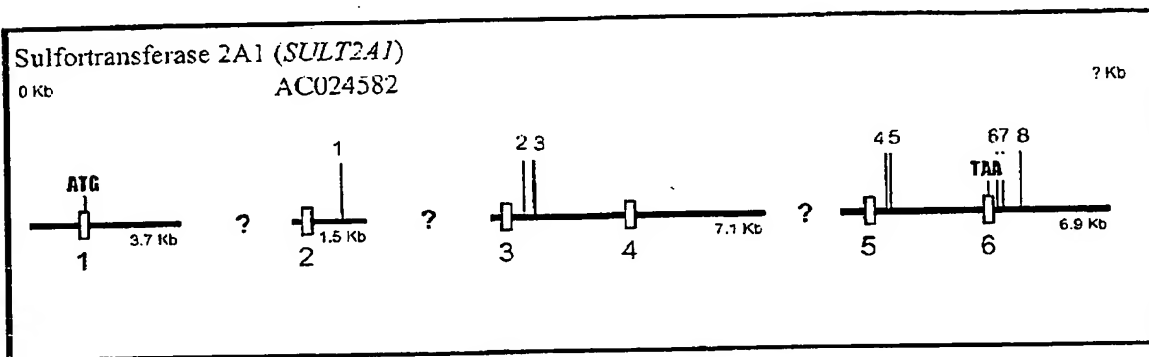


Fig. 36

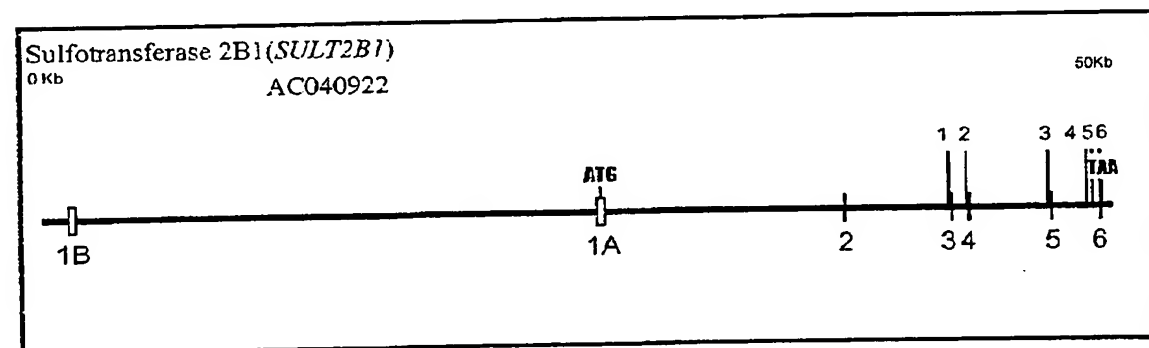


Fig. 37

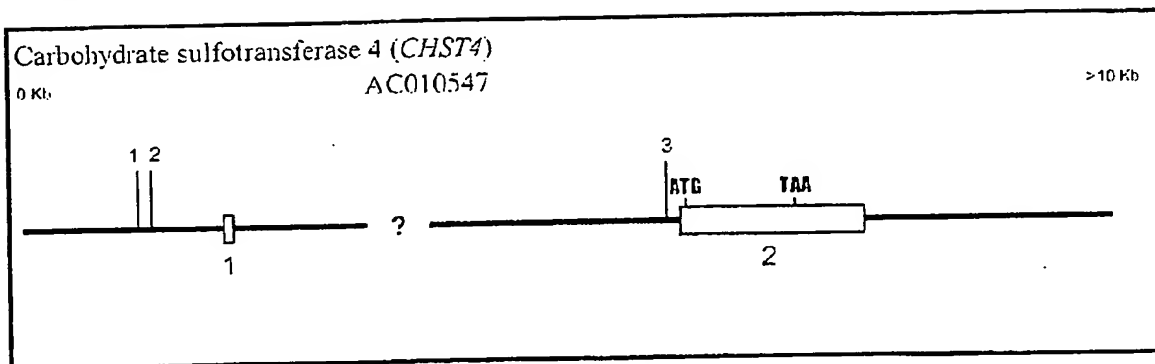


Fig. 38

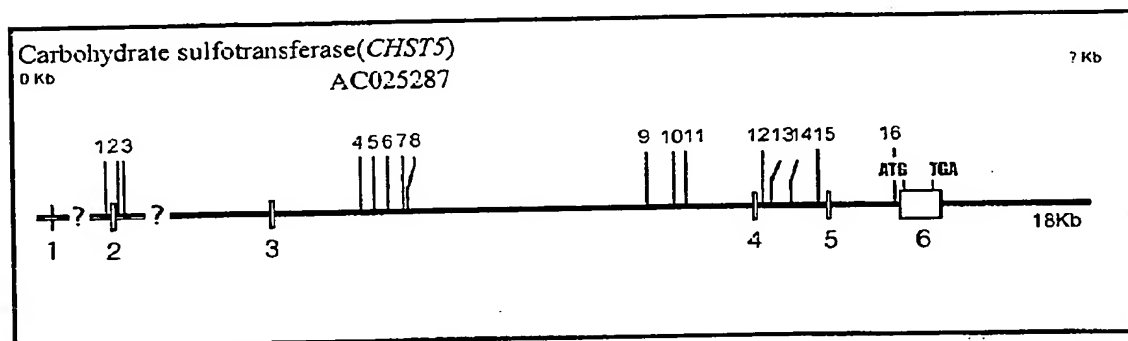


Fig. 39

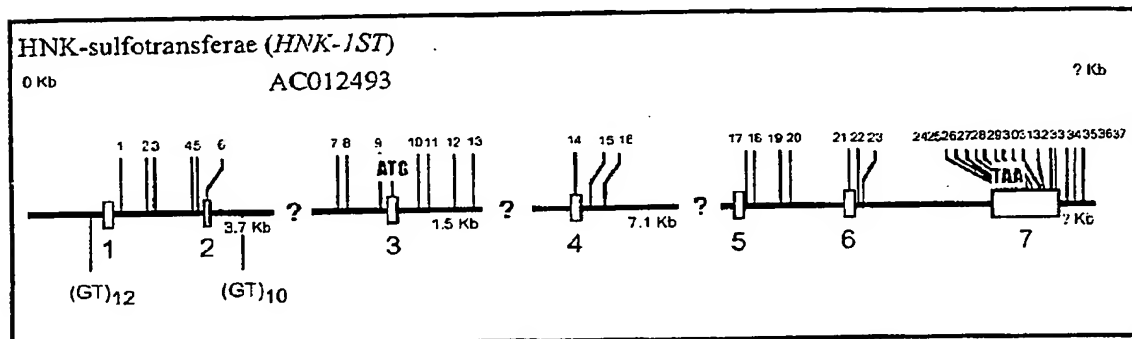


Fig. 40

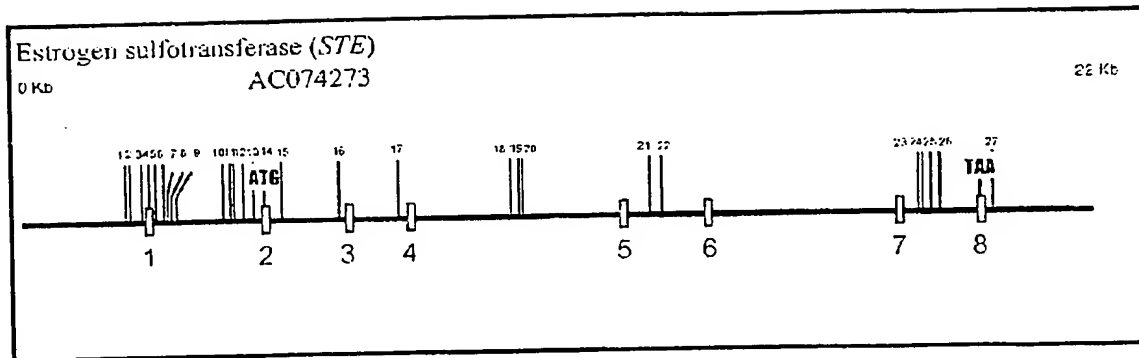


Fig. 41

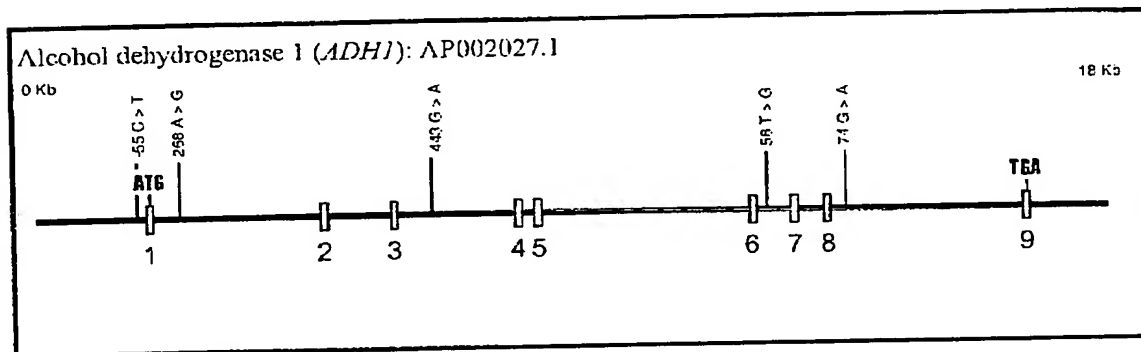


Fig. 42

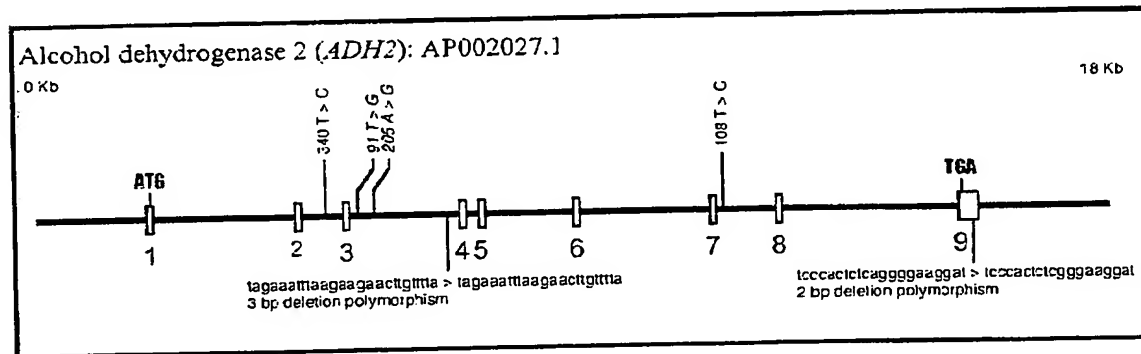
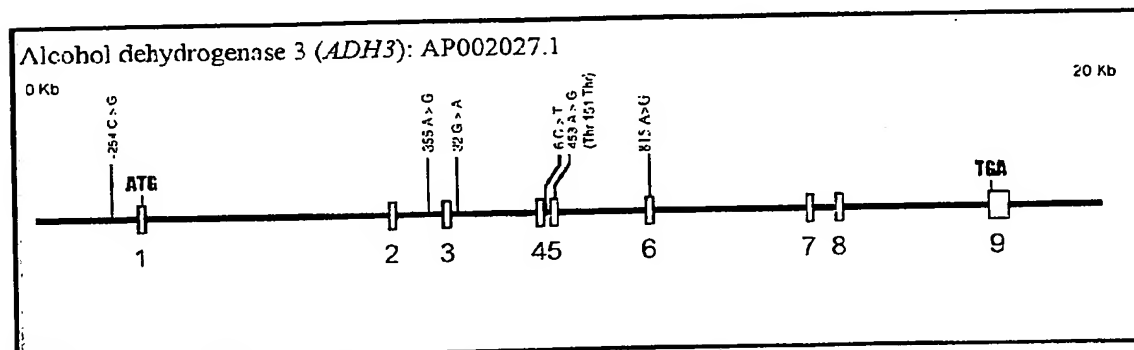


Fig. 43





Alcohol dehydrogenase 6 (*ADH6*): AP002026.1

0 Kb

18 Kb

ATG

1 2 3 4 5 6 7 8

240 C > A

1072 A > G  
1072 G > A  
1072 Val 295 Val

1202 C > A  
1616 T > C

TAA

Alcohol dehydrogenase 7 (*ADH7*): AC027065.3

0 Kb

1 2 3 4 5 6 7 8 9

ATG

528 T > C

361 C > T

193 A > G

176 G > A

615 T > A

532 T > C

531 G > A

727 G > A

1207 T > C

1501 G > A

1384 T > C

1398 T > C

1534 C > G

1518 A > G

1555 C > T

> 27 Kb

Short chain alcohol dehydrogenase family gene (*HEP27*): AC012505.4

0 Kb 12 Kb

-191 A > T -183 C > A

1941 G > C ATG

289 G > A (Ala 87 Thr)

1070 T > C

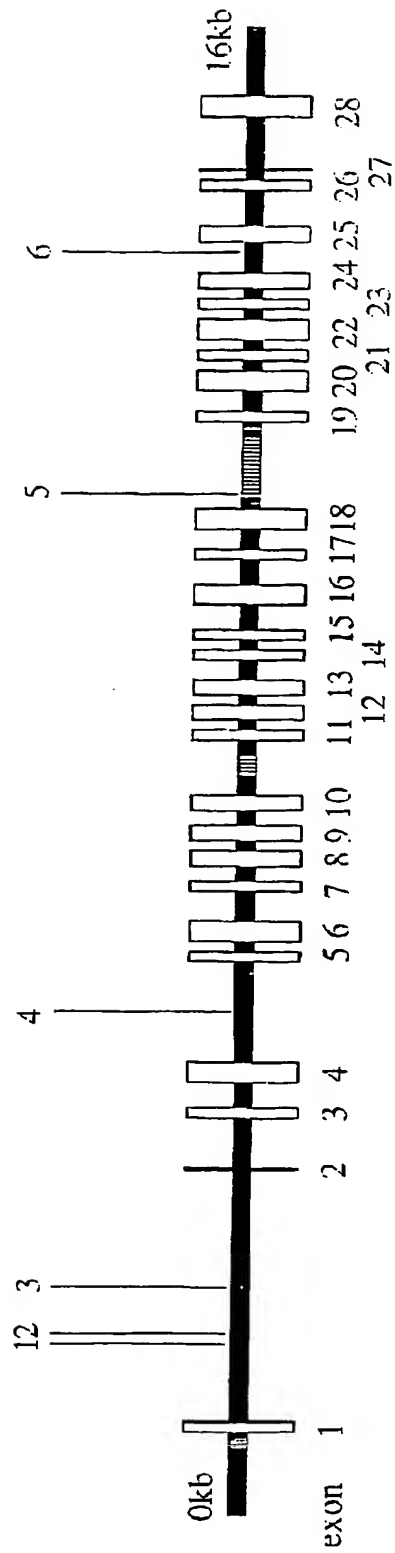
TGA 362 A > G

1 2 3 4 5 6 7 8 9

Fig. 47

*L1 cell adhesion molecule (L1CAM)*

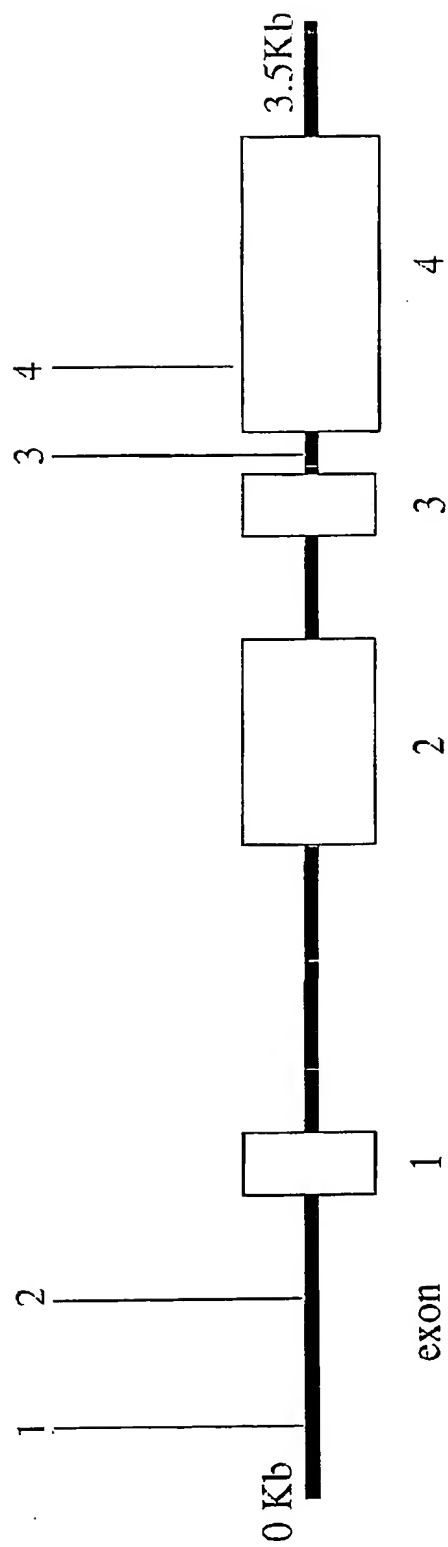
Accession No. U52112



*arylalkylamine N-acetyltransferase(AANAT)*

Fig. 48

Accession No. U40391



*N*-acetyltransferase, homolog of *S. cerevisiae* (*ARD1*)

Accession No. U52112

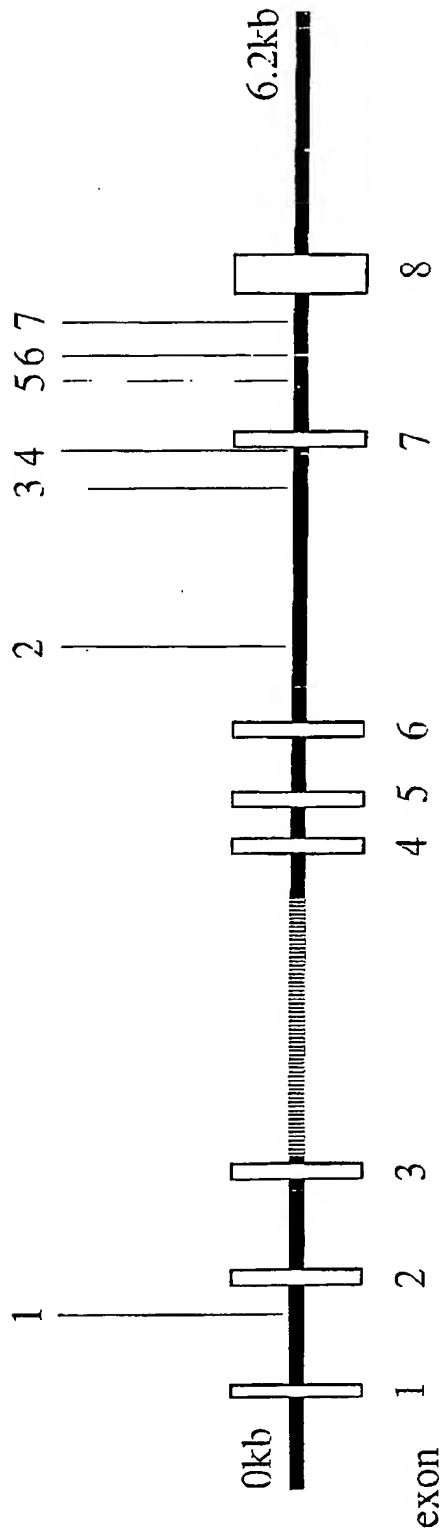


Fig. 49

Fig. 50

*N*-acetyltransferase (NAT1)

Accession No. X17059

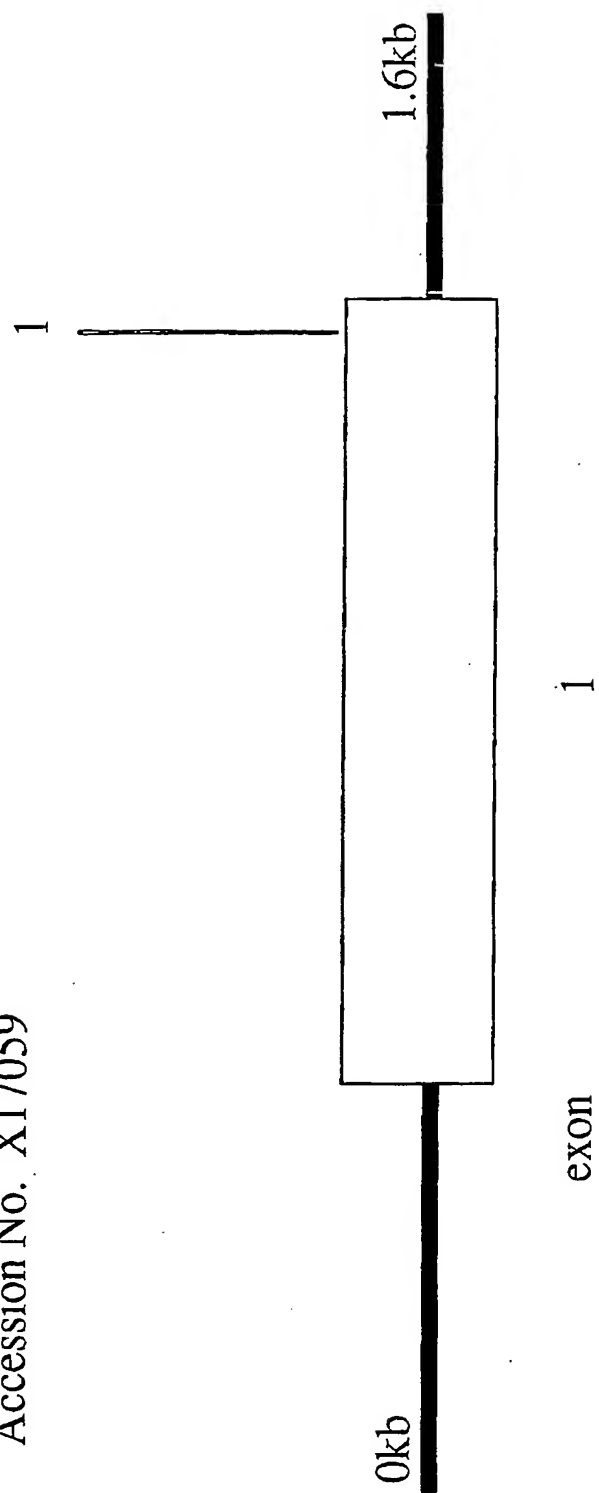
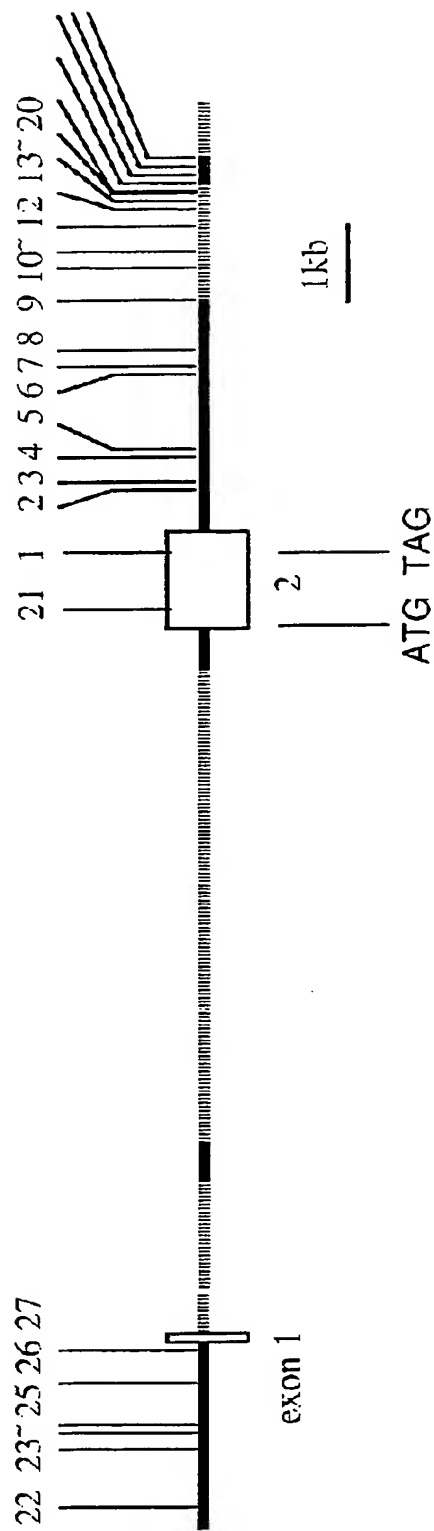


Fig. 51



Granzyme A(GZMA)

Accession No. AC025790

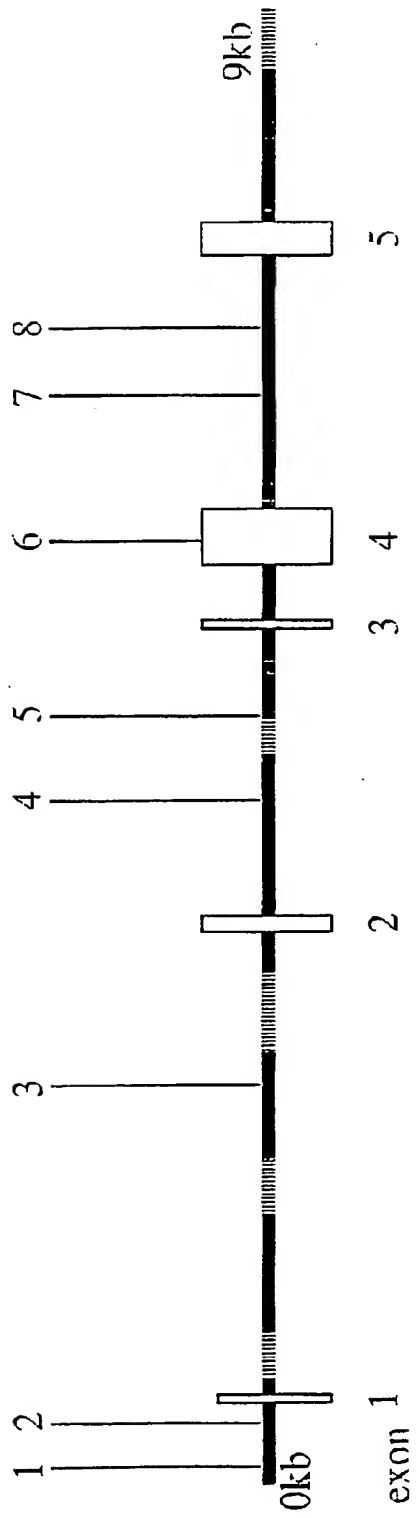
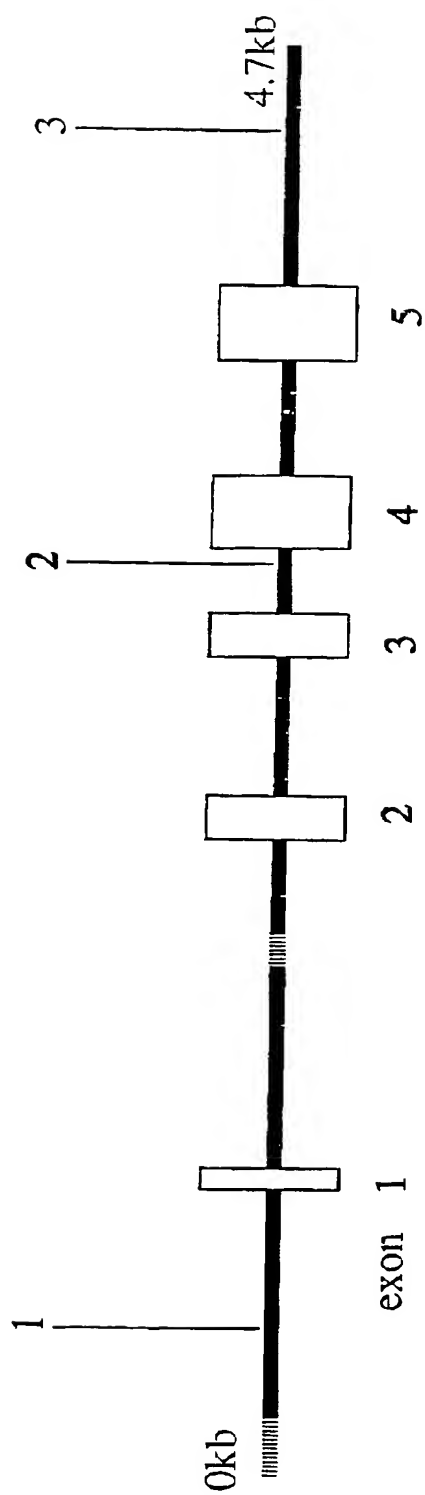


Fig. 52

Fig. 53

*Granzyme B (GZMB)*

Accession No. M72150





esterase D/formylglutathione hydrolase (ESD)

Accession No. AC136958

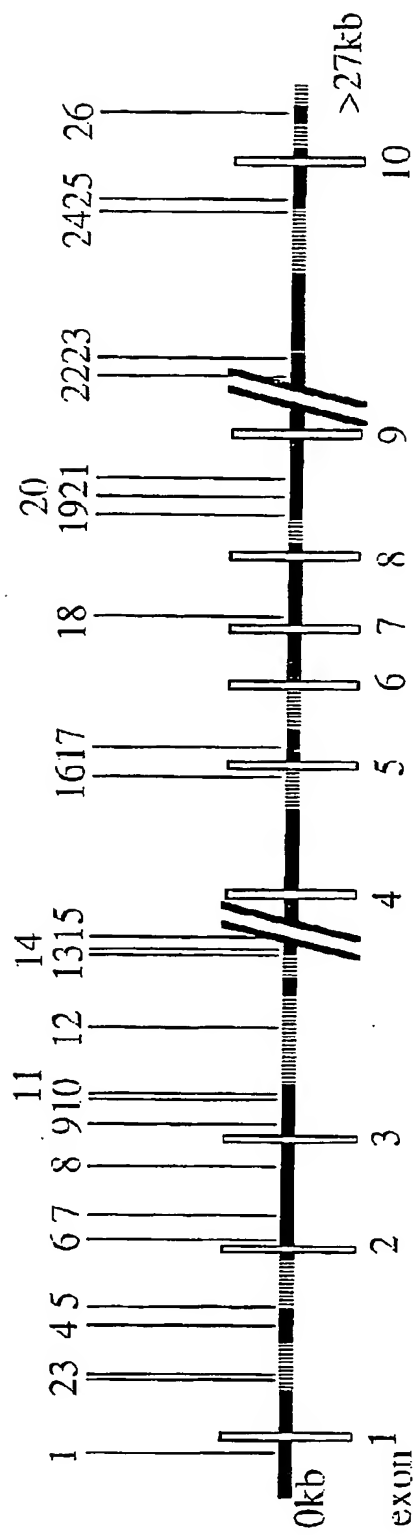
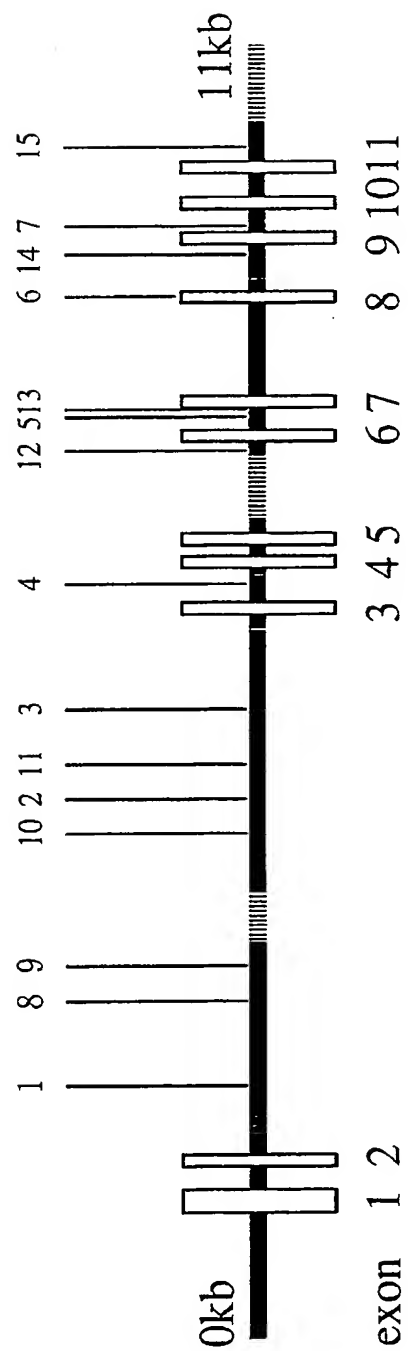


Fig. 54

Fig. 55

*dolichyl-diphosphooligosaccharide-protein glycosyltransferase (DDOST)*

Accession No. D89060



Microsomal glutathione S-transferase 1 (*MGST1*)

0 kb

SNPs

Exons

Other types of variations

1a 1b 1c 1d 2 3 4

ATG

TAA

27.7kb

Alcohol dehydrogenase 5 (*ADH5*): AC019131.4

0 Kb

> 20 Kb

ATG

TAA

1 2 3 4 5 6 7 8 9

Glutathione S transferase M1 (*GSTM1*): AC000032.7

0 Kb

10 Kb

ATG

1 2 3 4 5 6 7 8

TAG

10 Kb

Glutathione S transferase M2 (*GSTM2*): AC000031.5

0 Kb

11 Kb

Diagram illustrating the structure of the Glutathione S transferase M2 (*GSTM2*) gene, showing exons 1 through 8. The gene is flanked by ATG and TAG start and stop codons. Mutations are indicated by vertical lines with labels: 7C>G, 45C>T, 70G>C, 224T>C, 100C>A, 341T>C, 696C>T, 723A>G, 1006G>A, and 1320G>T.

Fig. 60

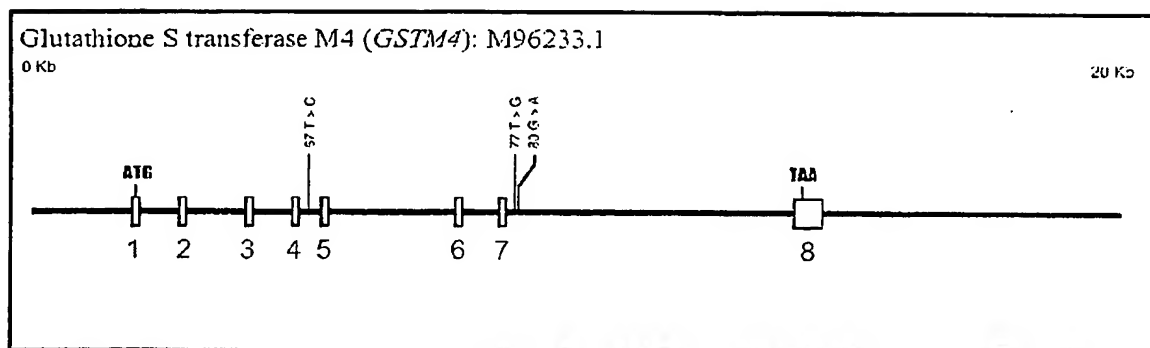


Fig. 61

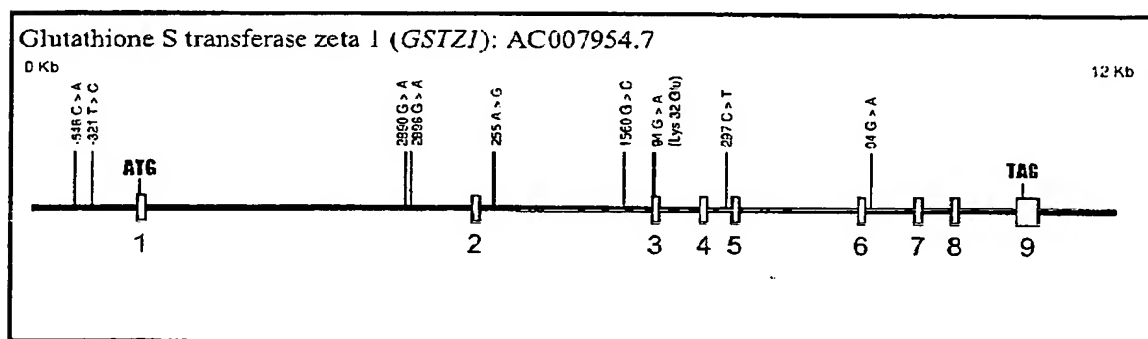


Fig. 62

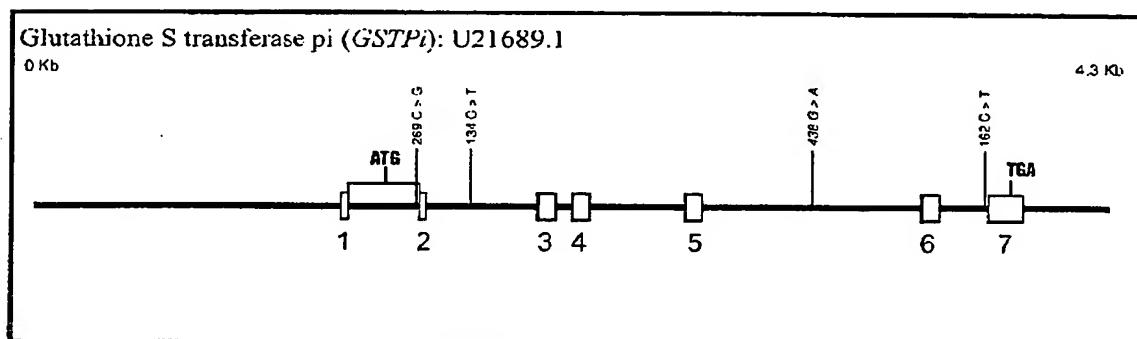


Fig. 63

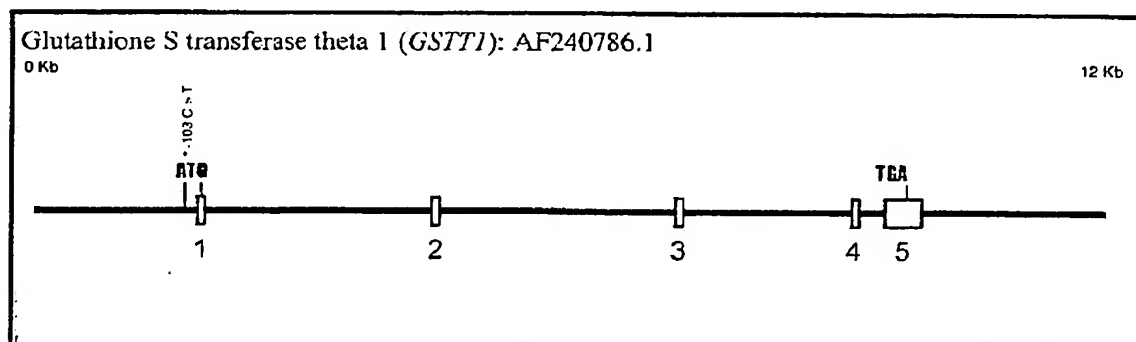


Fig. 64

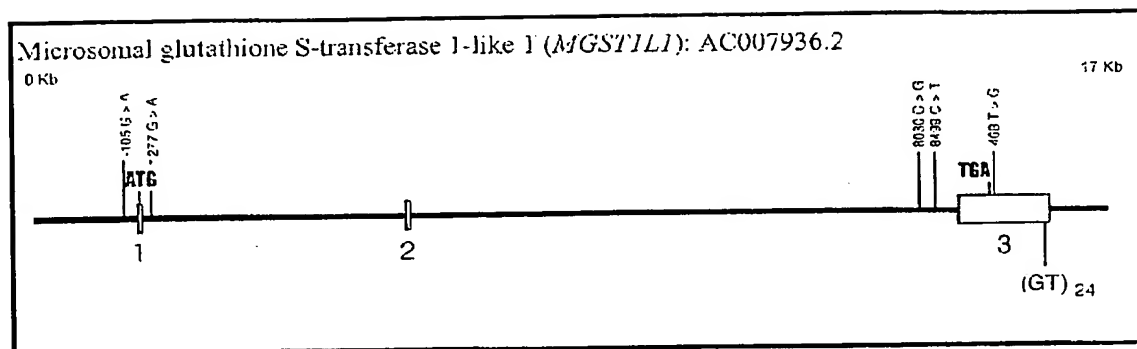


Fig. 65

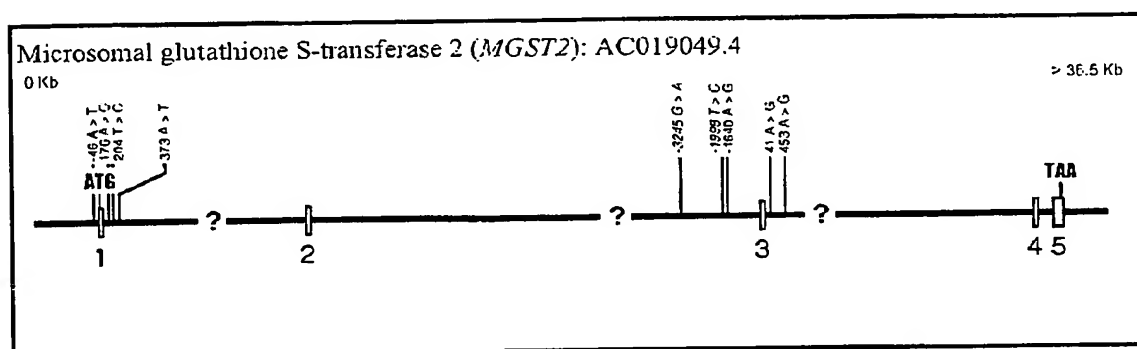


Fig. 66

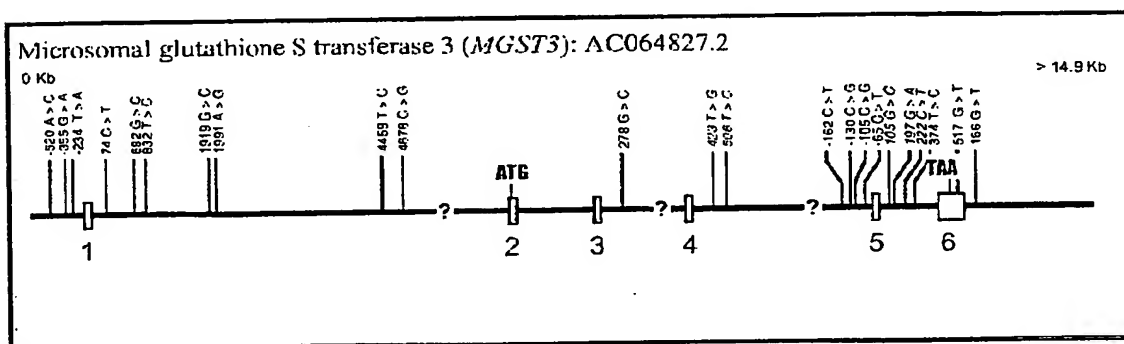


Fig. 67

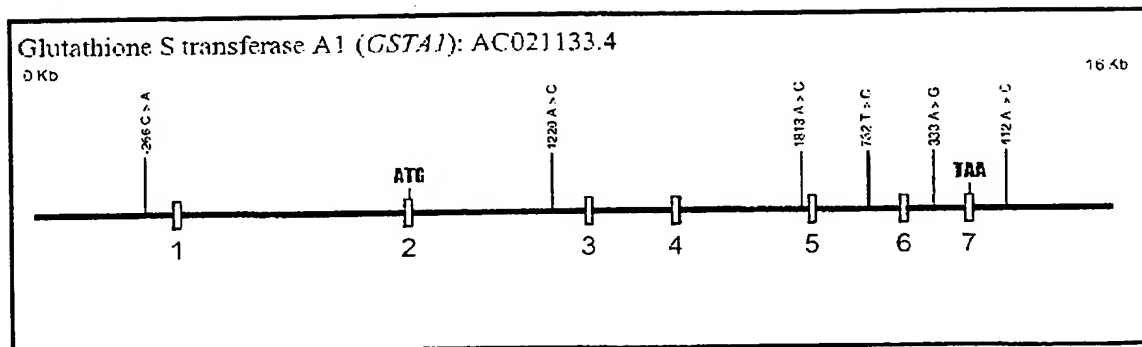


Fig. 68

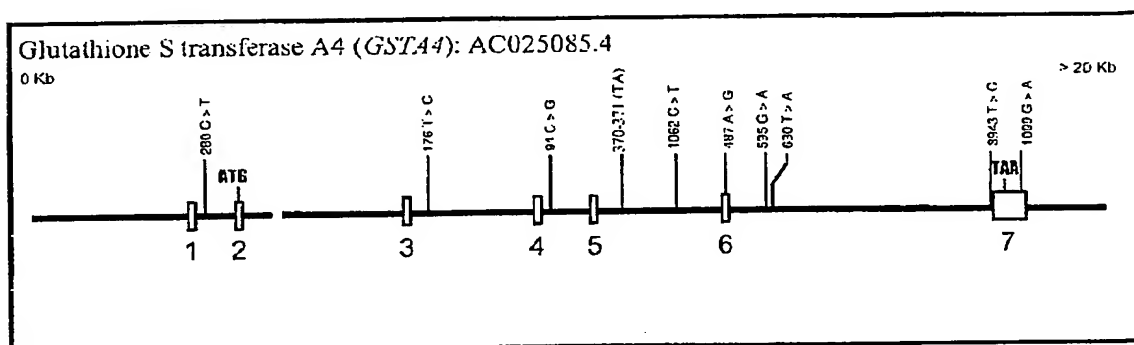


Fig. 69

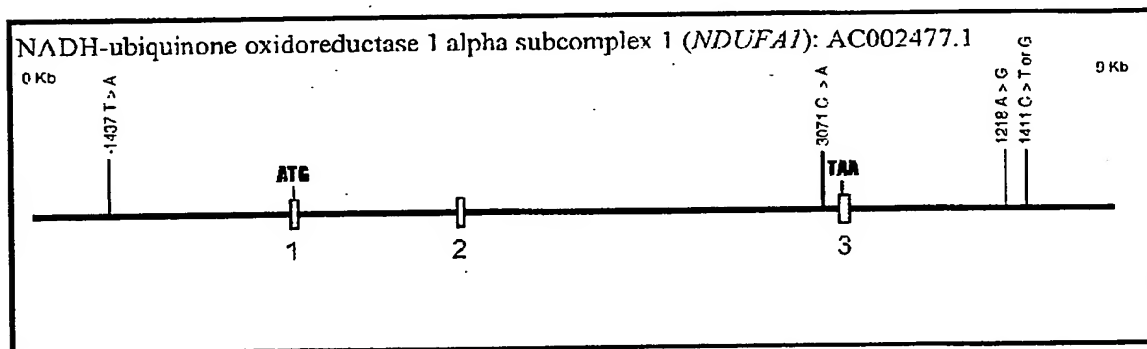


Fig. 70

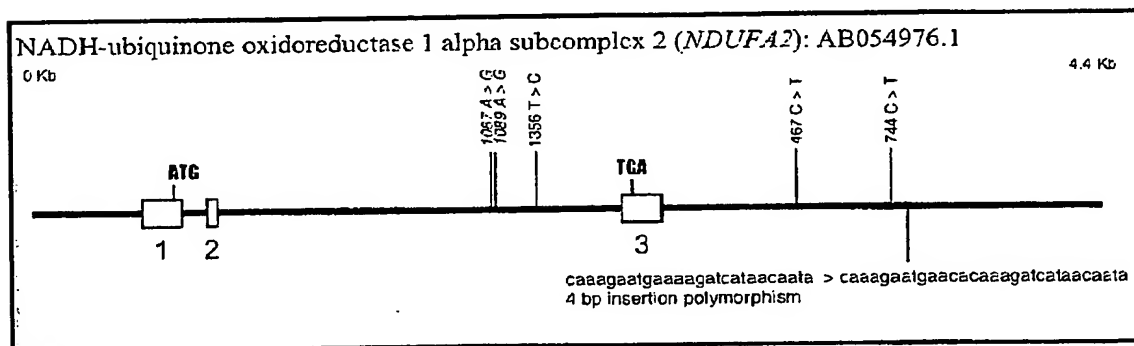










Fig. 83

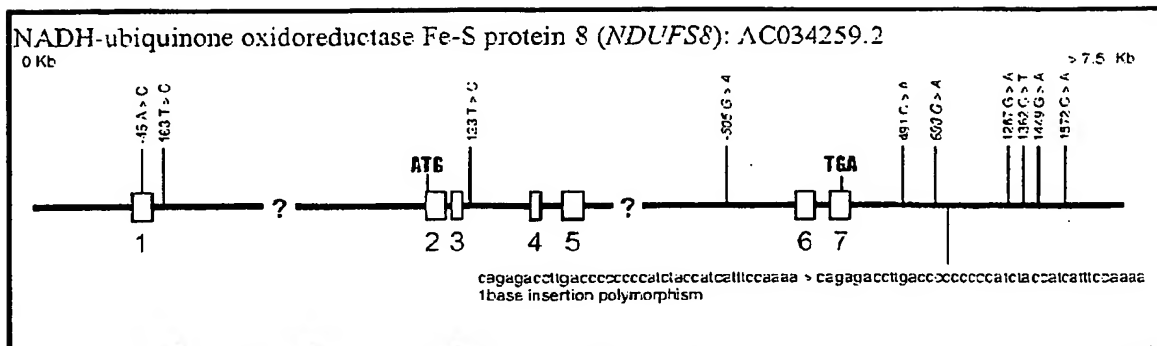


Fig. 84

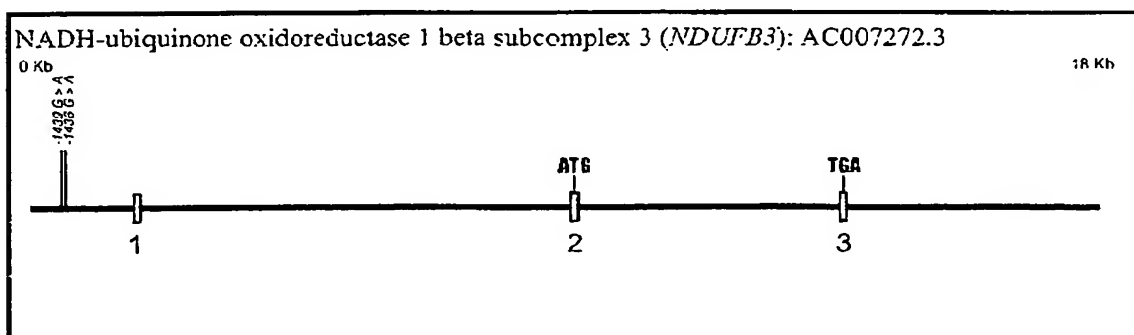


Fig. 85

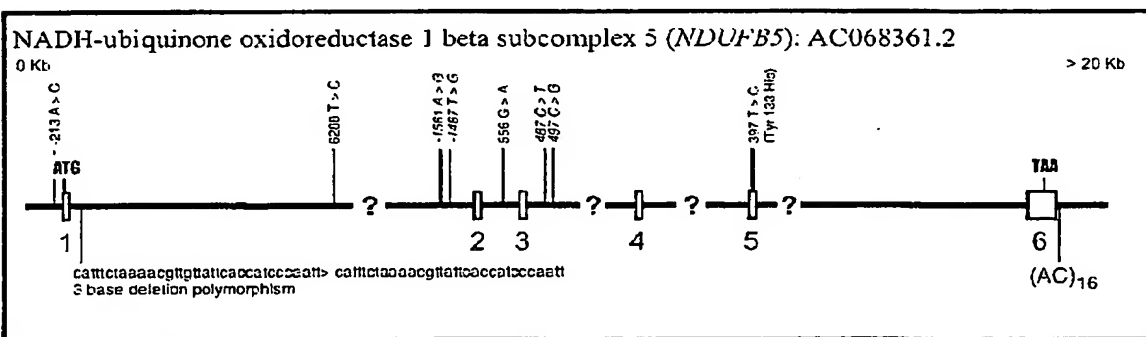
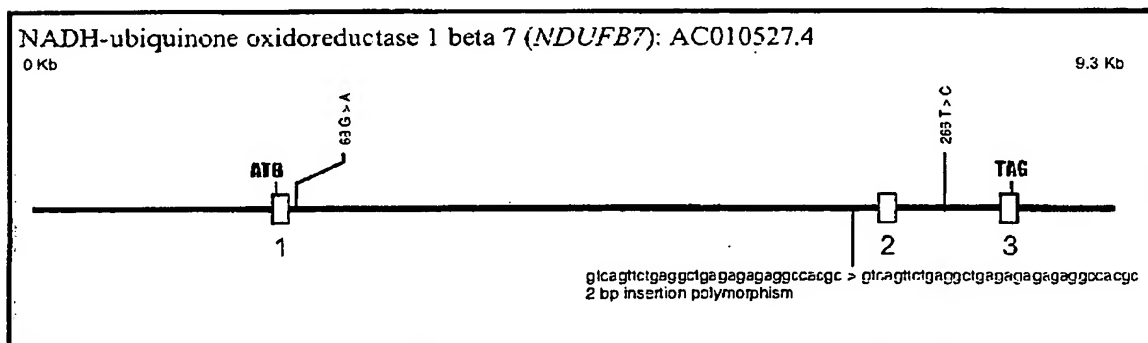
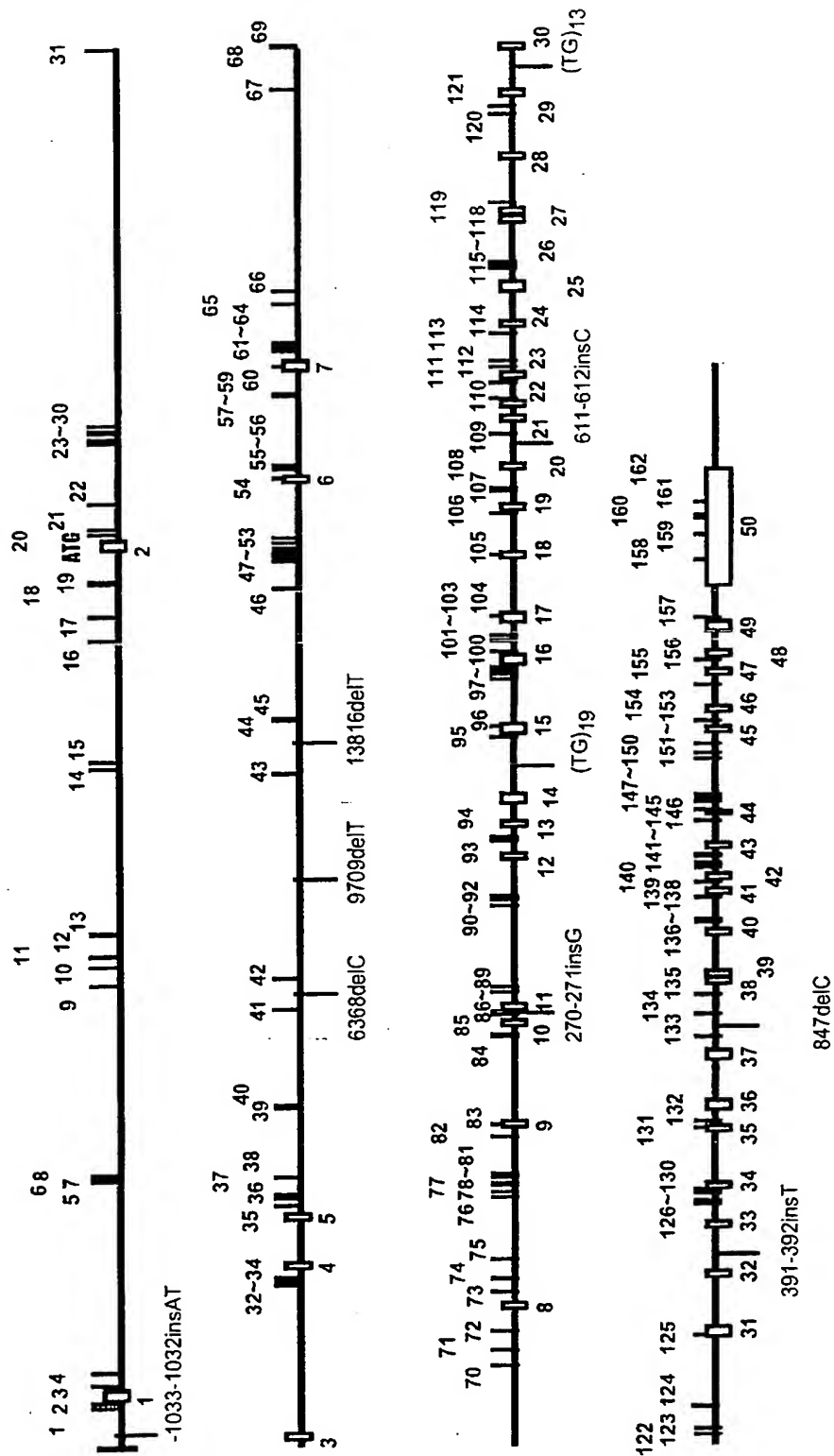


Fig. 86



**ABCA1**      **ACCESSION**      **AF275948.1**



# *Catechol-O-methyltransferase (COMT)*

ACCESSION AC000080

Fig. 88

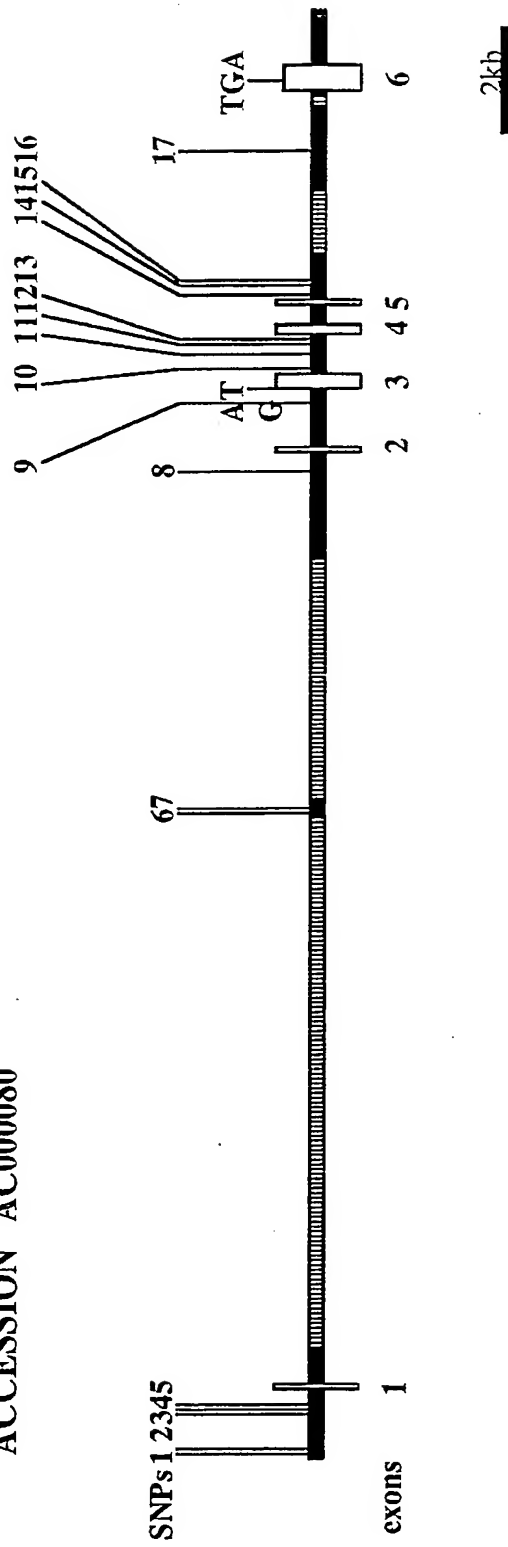


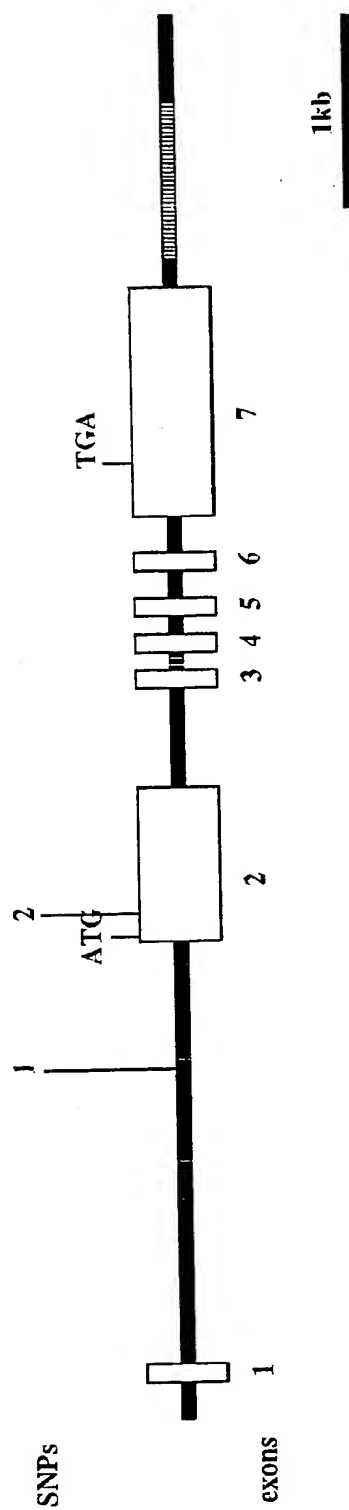
Fig. 89



Fig. 90

*Cytochrome P450, subfamily I, polypeptide I (CYP1A1)*

ACCESSION X04300



*Cytochrome P450, subfamily 1, polypeptide 2 (CYP1A2)*

ACCESSION AC020705

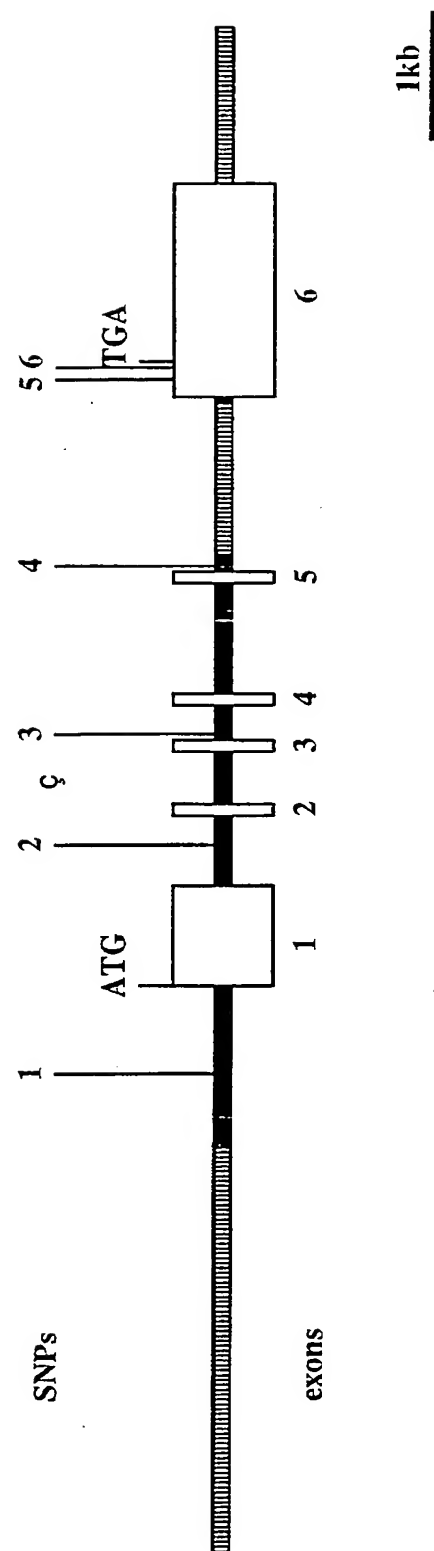


Fig. 91

Fig. 92

*Cytochrome P450, subfamily I, polypeptide 1 (CYP1B1)*

ACCESSION AC009229

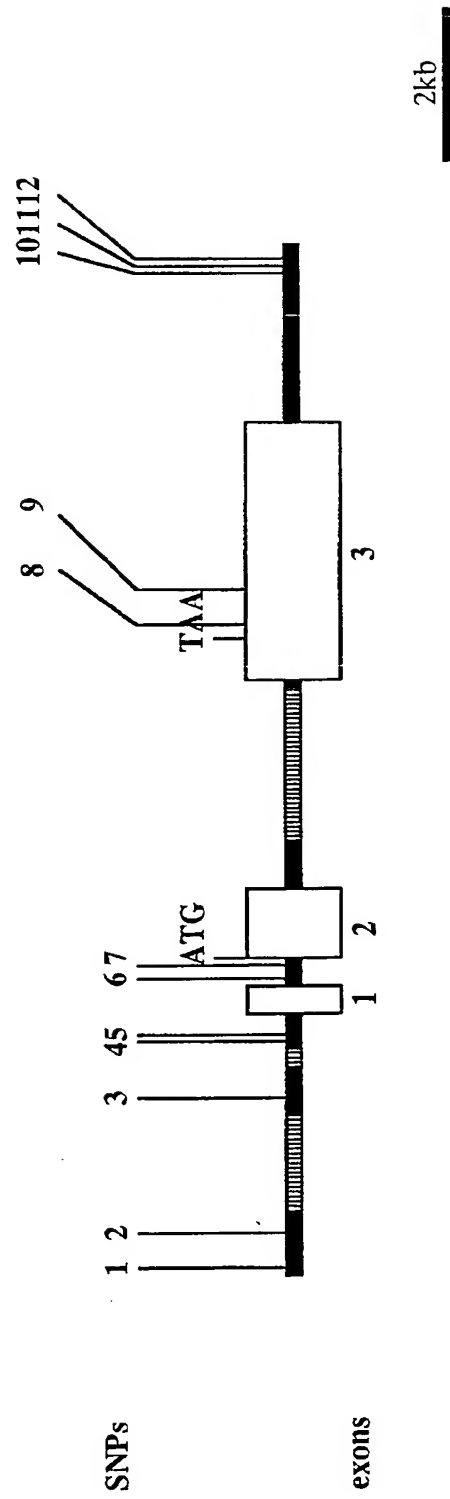




Fig. 93

*Arylacetamide deacetylase (AADAC)*

ACCESSION AC068647

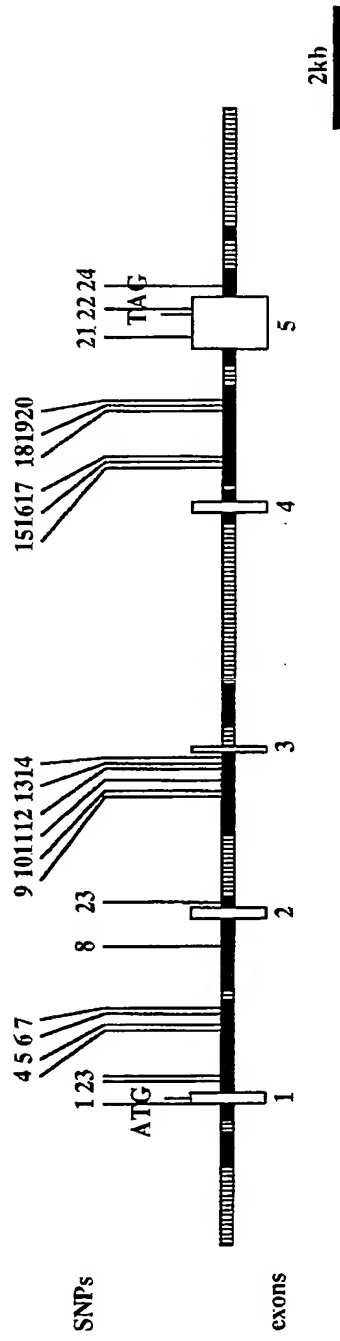


Fig. 94

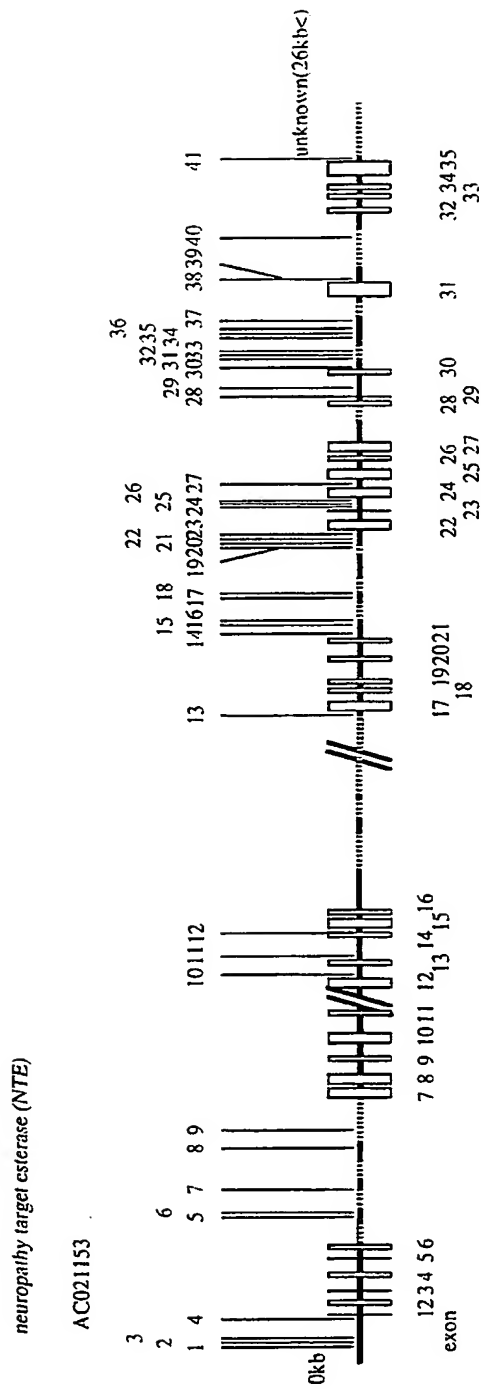


Fig. 95

*ATP-binding cassette, sub-family C (CFTR/MRP), member2 (MRP2)*

ACCESSION AL392107

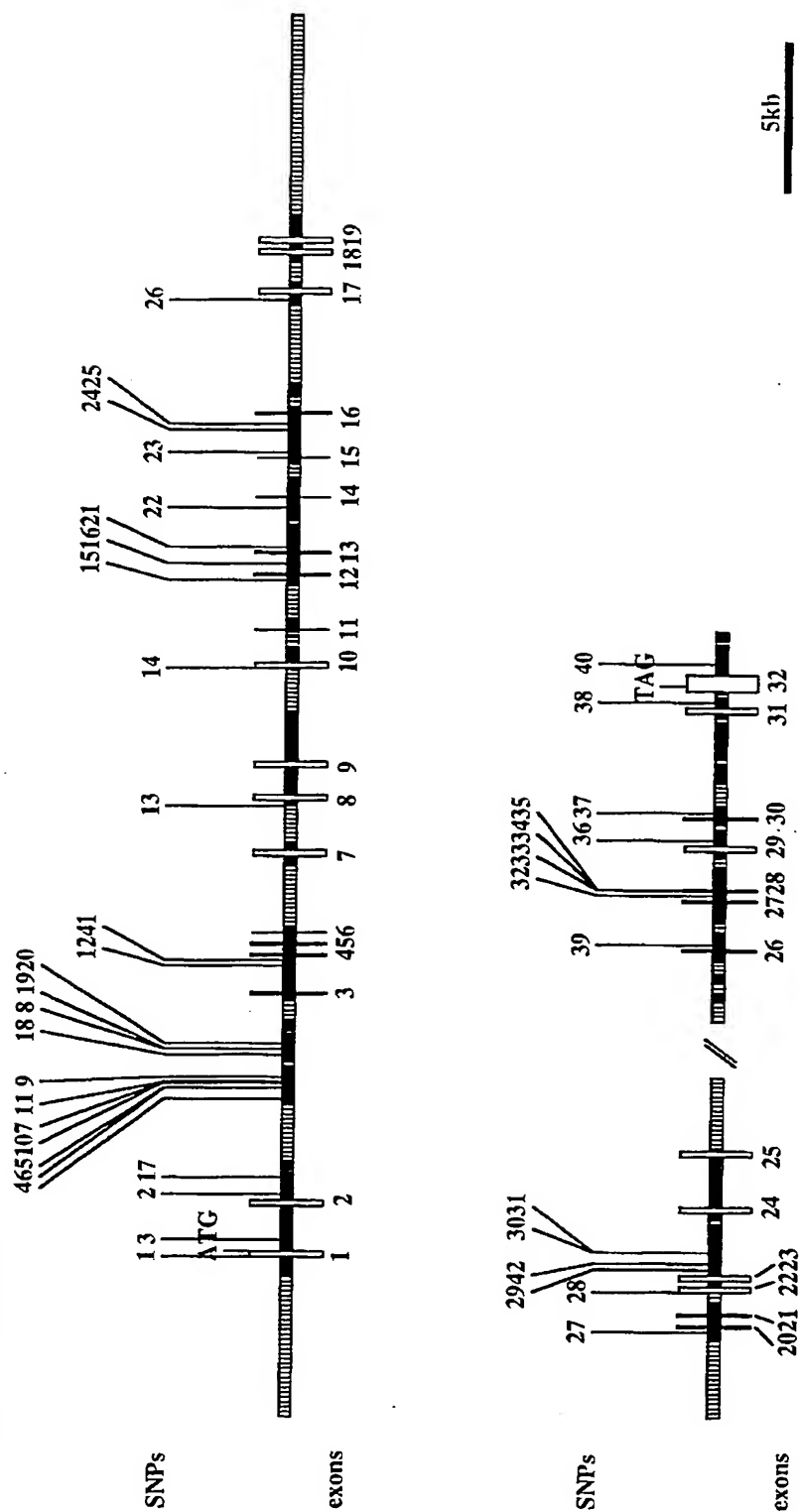


Fig. 96

*ATP-binding cassette, sub-family B, member1 (ABCB1)*

ACCESSION AC002457  
AC005068

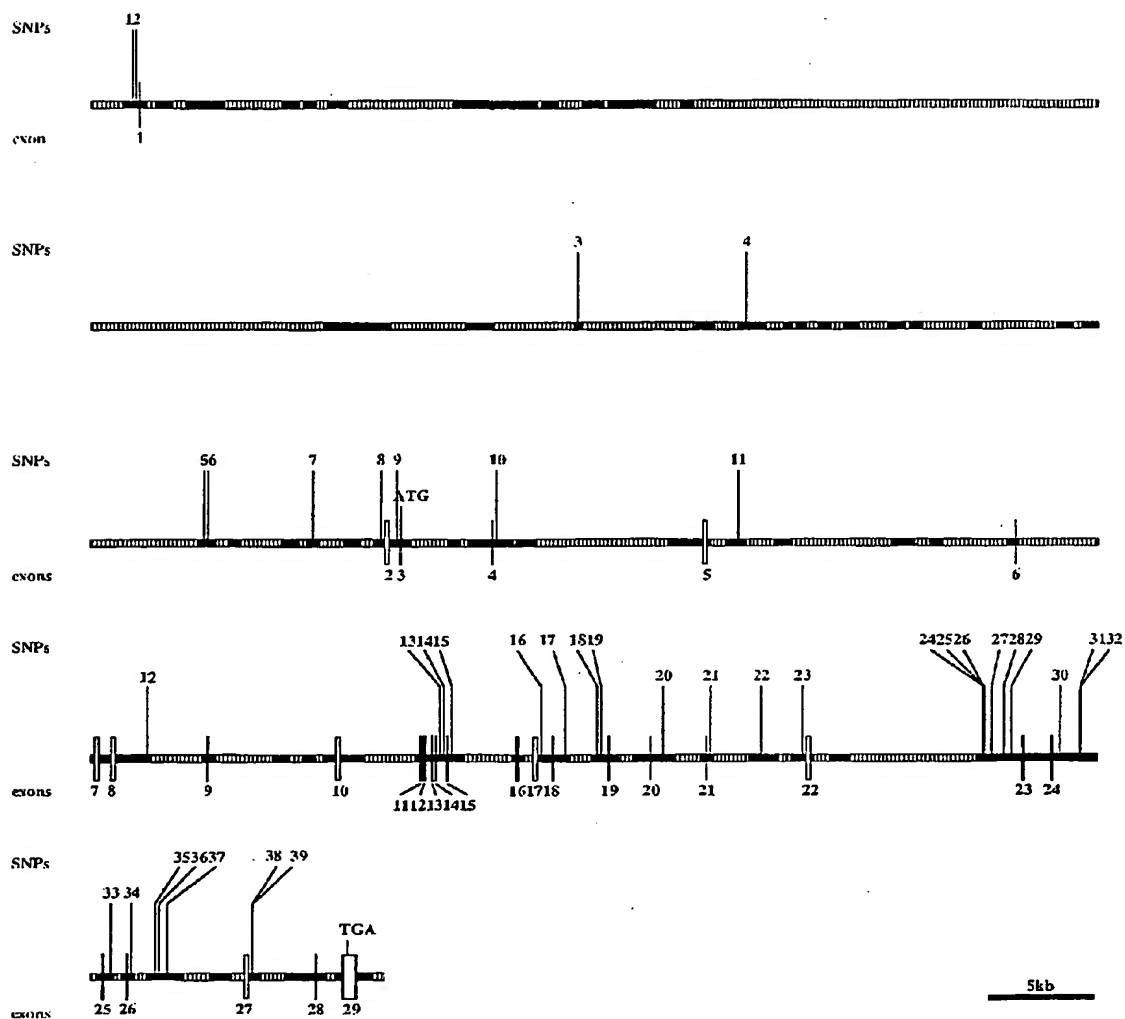


Fig. 97

*ATP-binding cassette, sub-family B, member 3 (ABCB3)*

ACCESSION X66401

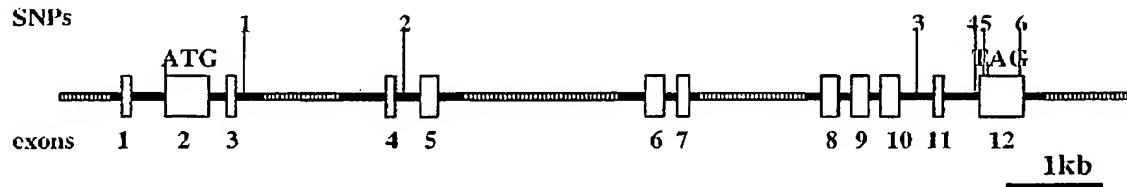


Fig. 98

*ATP-binding cassette, sub-family B, member 7 (ABCB7)*

ACCESSION

AL360179

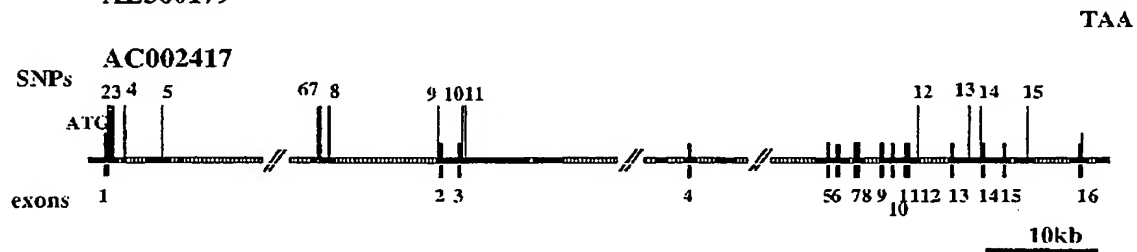


Fig. 99

*ATP-binding cassette, sub-family B, member 8 (ABCB8)*

ACCESSION AC010973

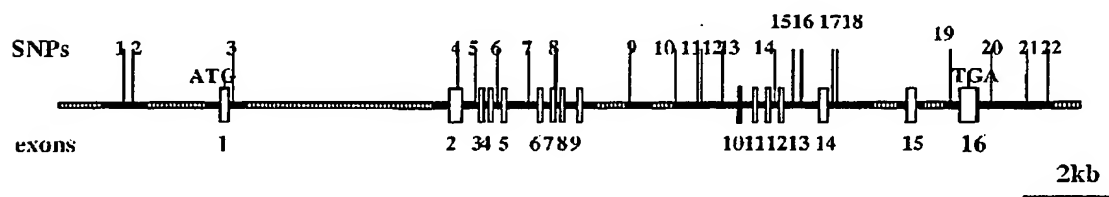


Fig. 100

*ATP binding cassette, sub-family B, member 9 (ABCB9)*

ACCESSION AC026362

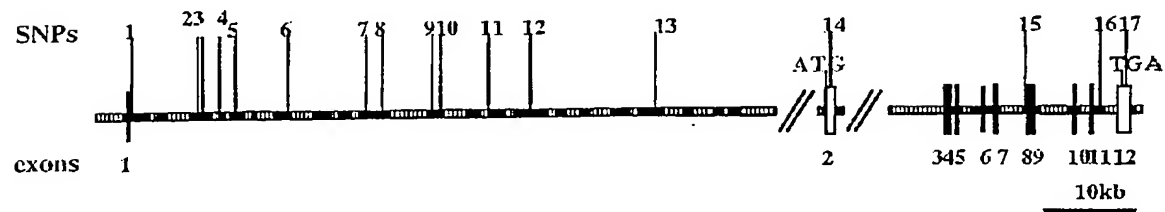
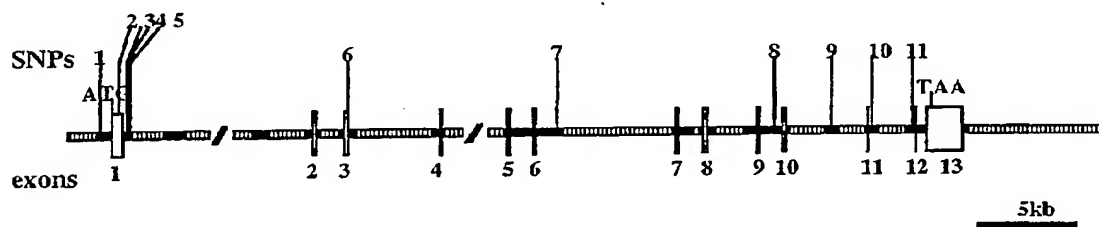


Fig. 101

*ATP binding cassette, sub-family B, member 10 (ABCB10)*

ACCESSION AL121990



*ATP-binding cassette, sub-family B, member 11 (ABCB11)*

[illegible]

***Cytochrome P450, subfamily IVB, polypeptide 1 (CYP4B1)***

[illegible]

Fig. 104

*Cytochrome P450, subfamily XXVIIA, polypeptide 1 (CYP27A1)*

ACCESSION AC009974

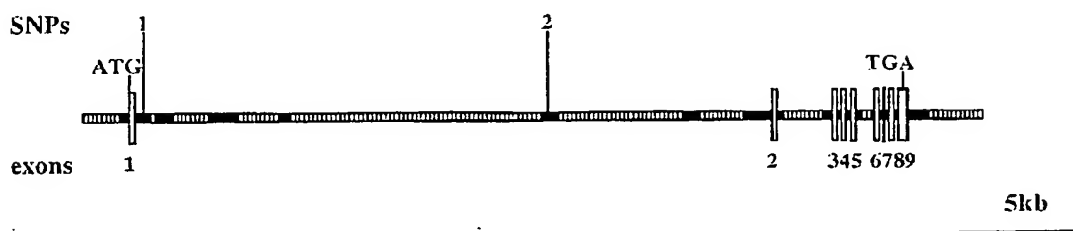


Fig. 105

*Cytochrome P450, subfamily IVF, polypeptide 2 (CYP4F2)*

ACCESSION AC005336

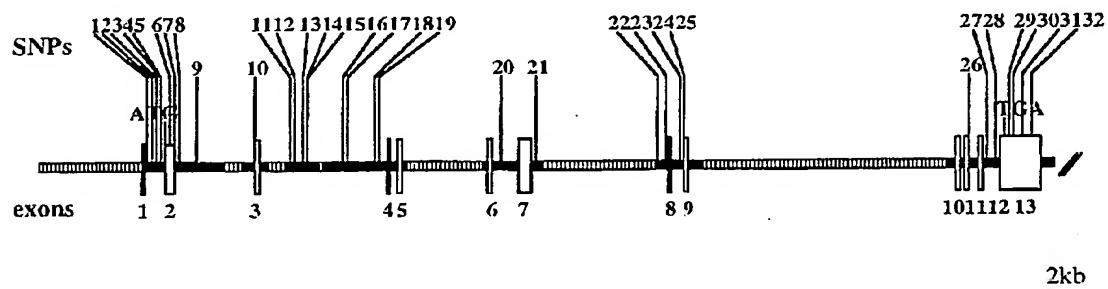


Fig. 106

*Cytochrome P450, subfamily 4F, polypeptide 3 (CYP4F3)*

ACCESSION AD000685

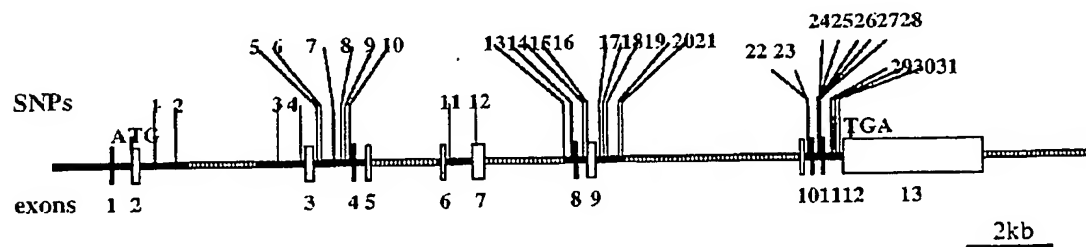




Fig. 107

*Cytochrome P450, subfamily 4F, polypeptide 8 (CYP4F8)*

ACCESSION AC068845

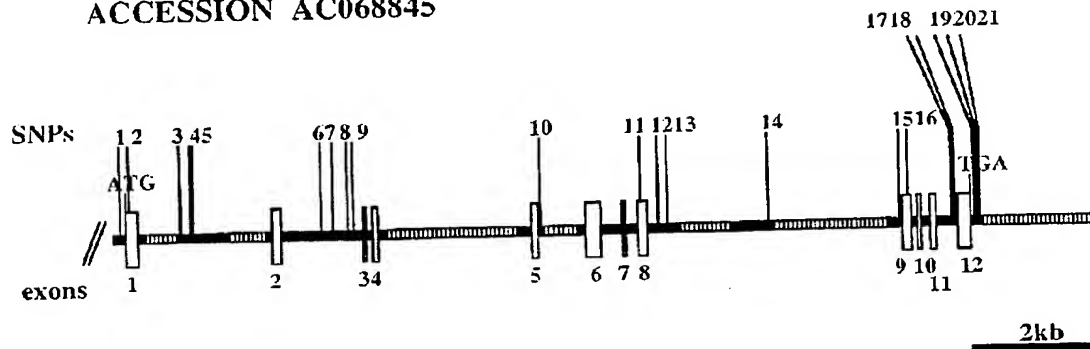


Fig. 108

*Aldehyde dehydrogenase 1 (ALDH1)*

ACCESSION

AC009284

AL162416

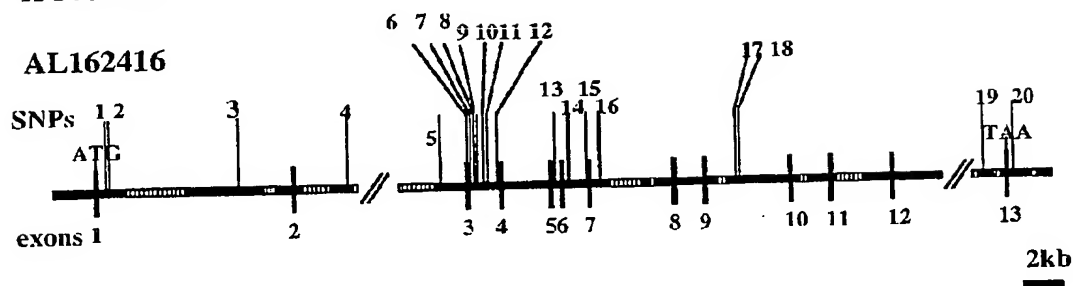


Fig. 109

*Aldehyde dehydrogenase 2 (ALDH2)*

ACCESSION AC002996

AC003029

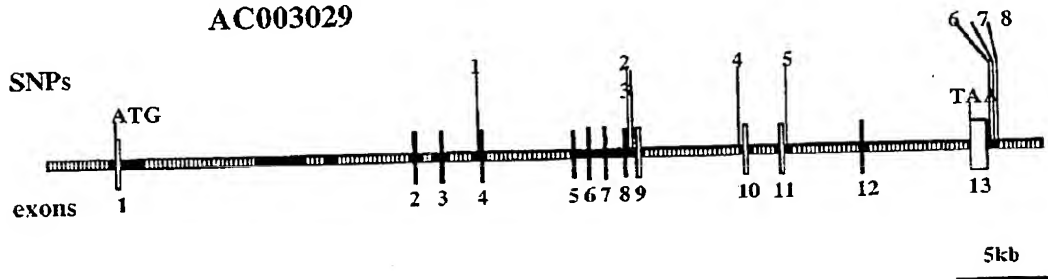


Fig. 110

*Aldehyde dehydrogenase 7 (ALDH7)*

ACCESSION AC004923

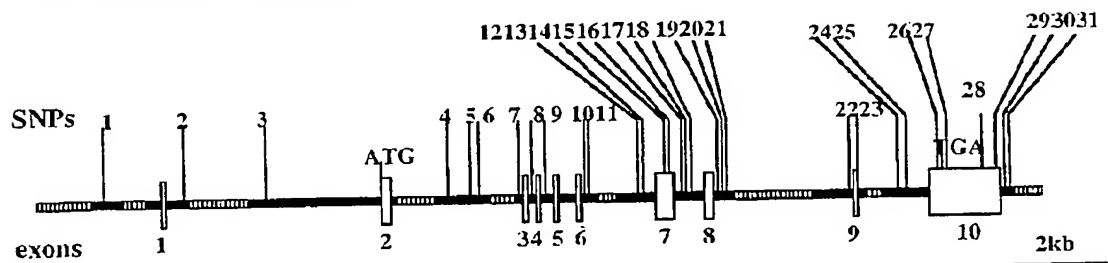


Fig. 111

*Aldehyde dehydrogenase 8 (ALDH8)*

ACCESSION AC021987

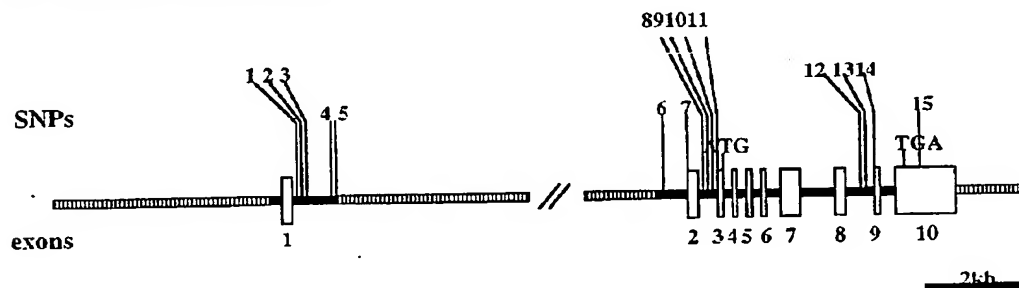


Fig. 112

*Aldehyde dehydrogenase 9 (ALDH9)*

ACCESSION AL451074

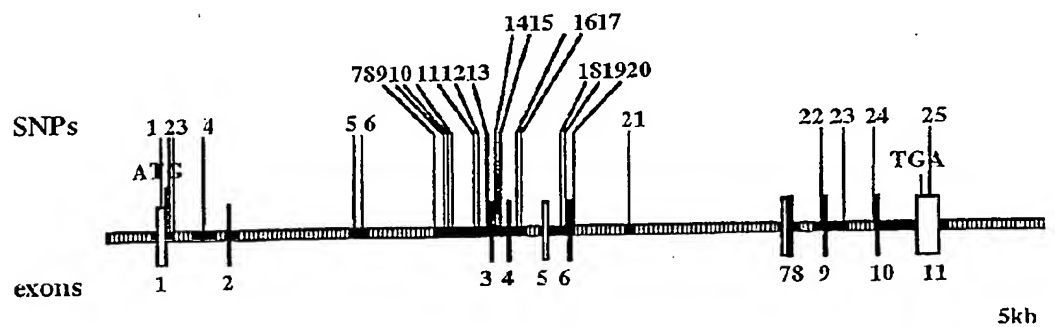


Fig. 113

*Aldehyde dehydrogenase 10 (ALDH10)*

ACCESSION AC005722

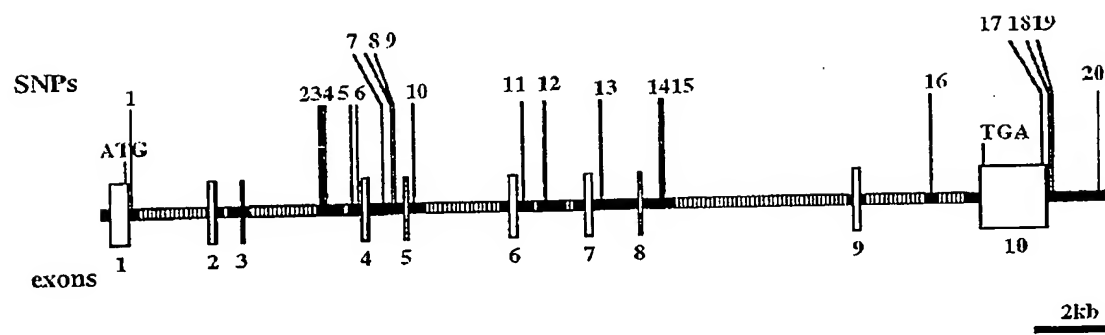
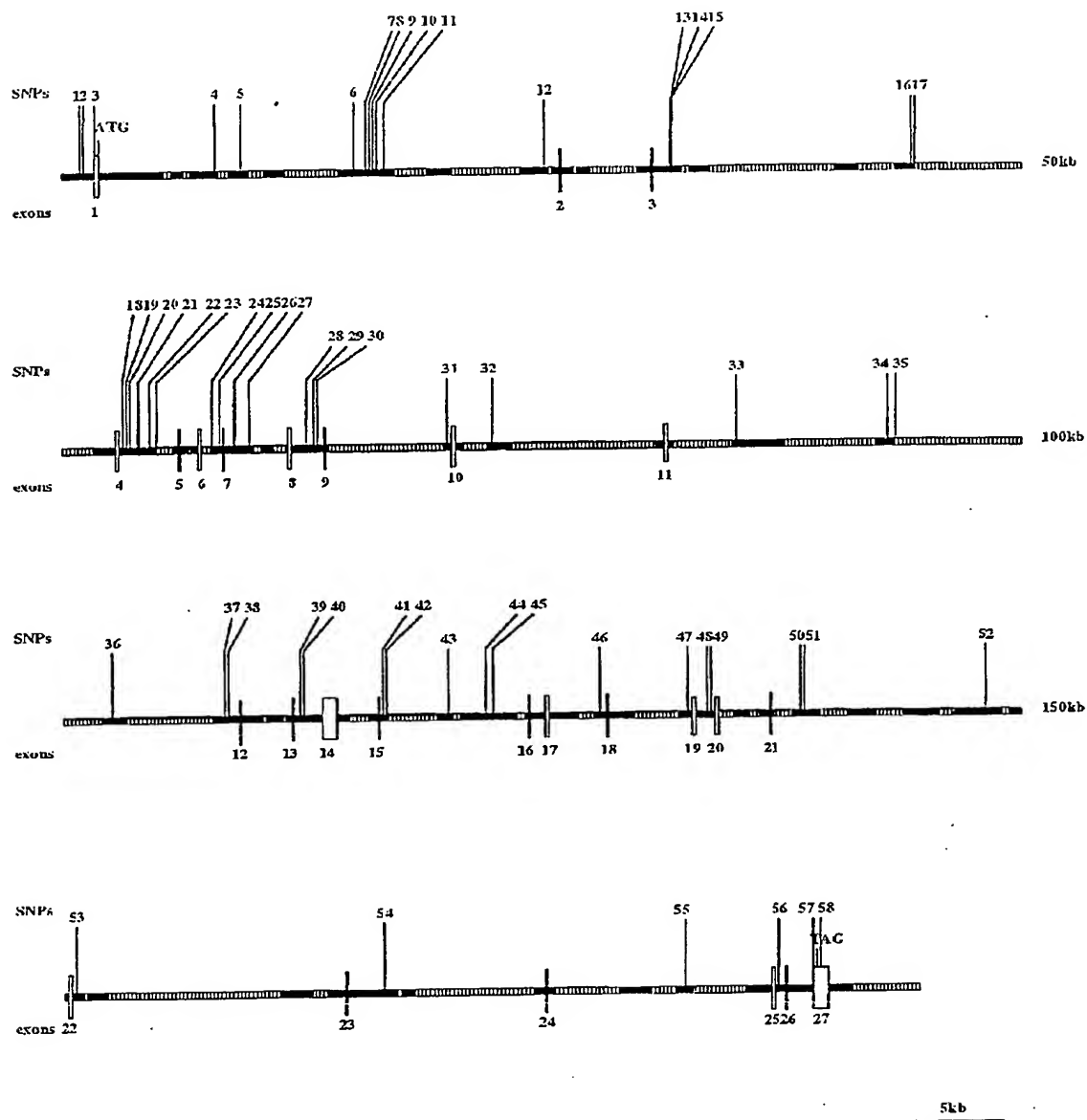


Fig. 114

*ATP binding cassette, sub-family C, member 7 (ABCC7)*

ACCESSION AC000117  
AC000061



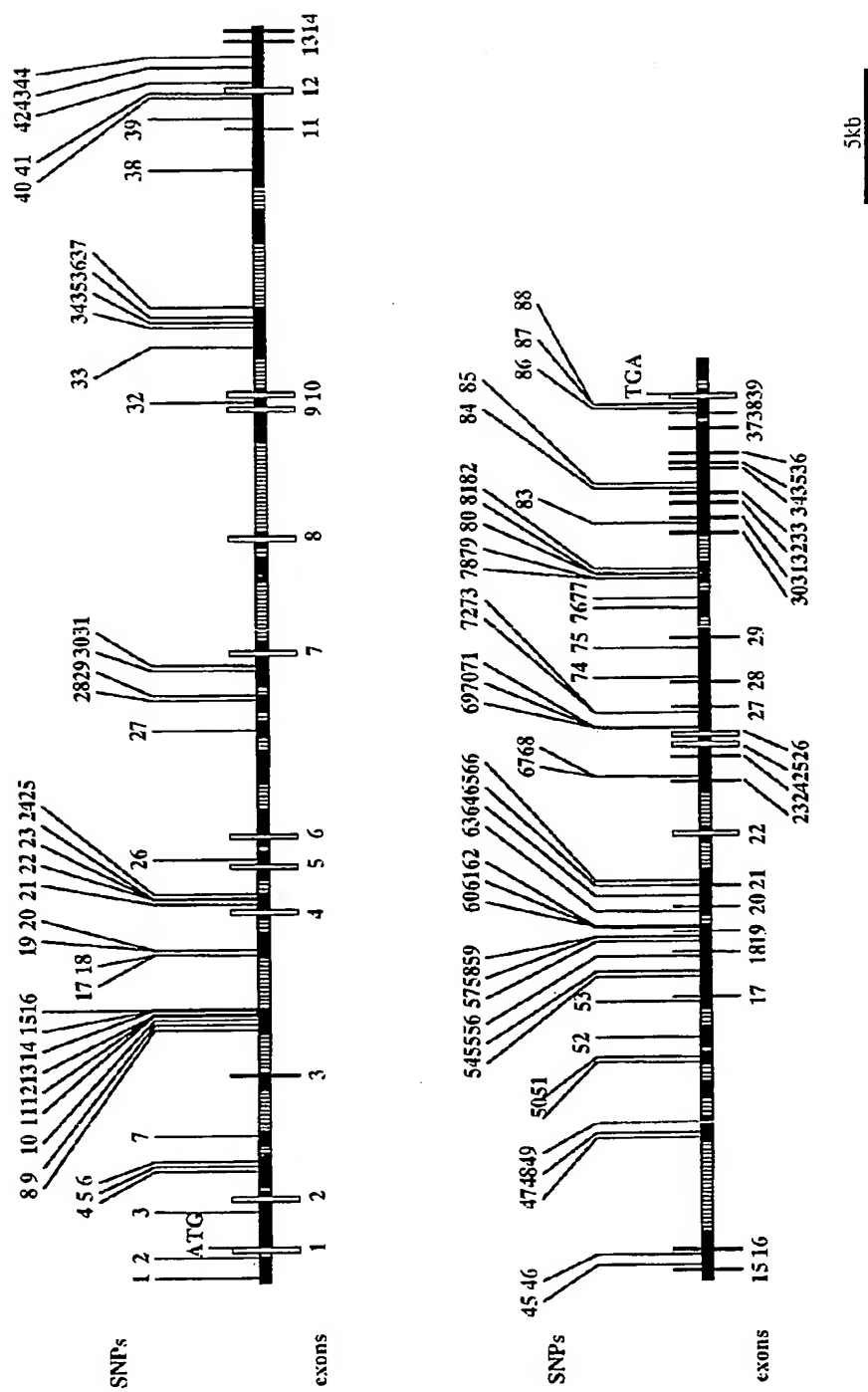


Fig. 116

*ATP binding cassette, sub-family C, member 9 (ABCC9)*

ACCESSION AC084806  
AC008250

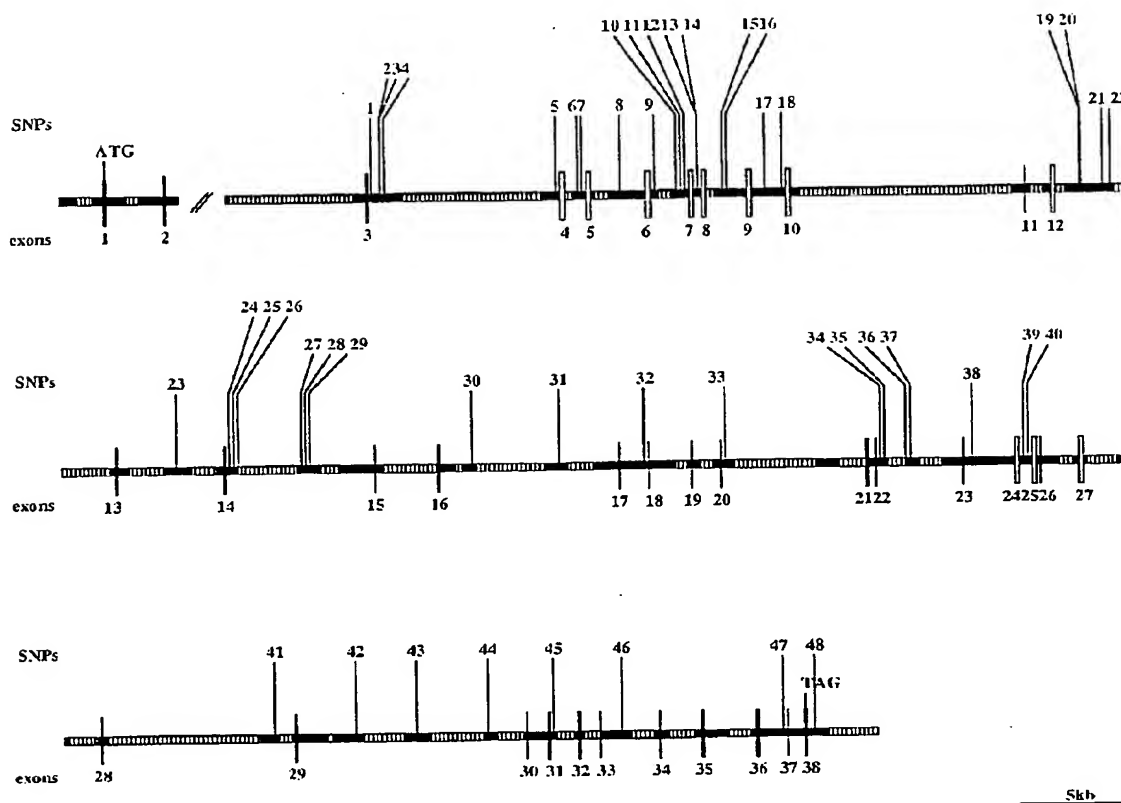
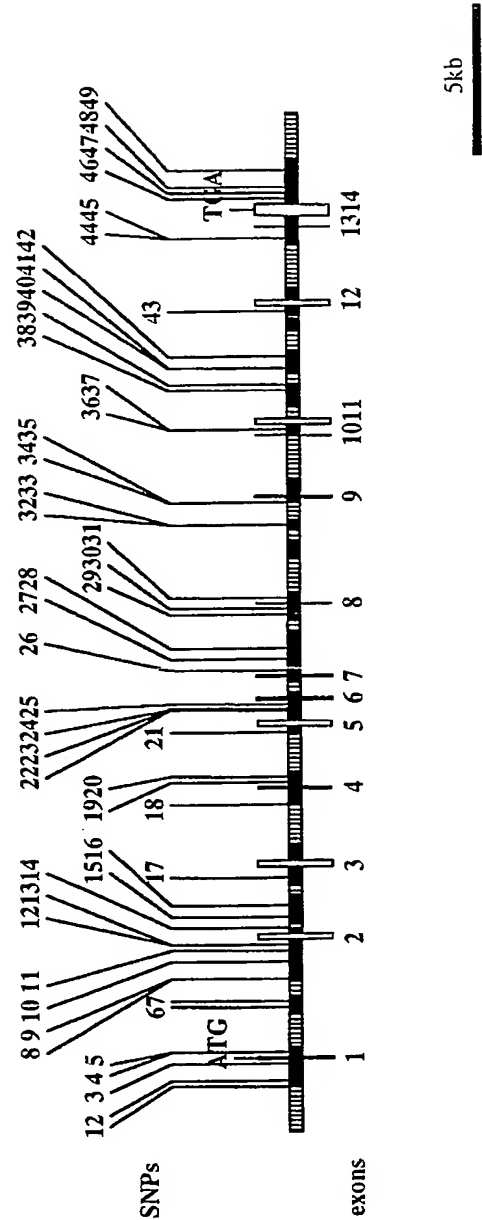


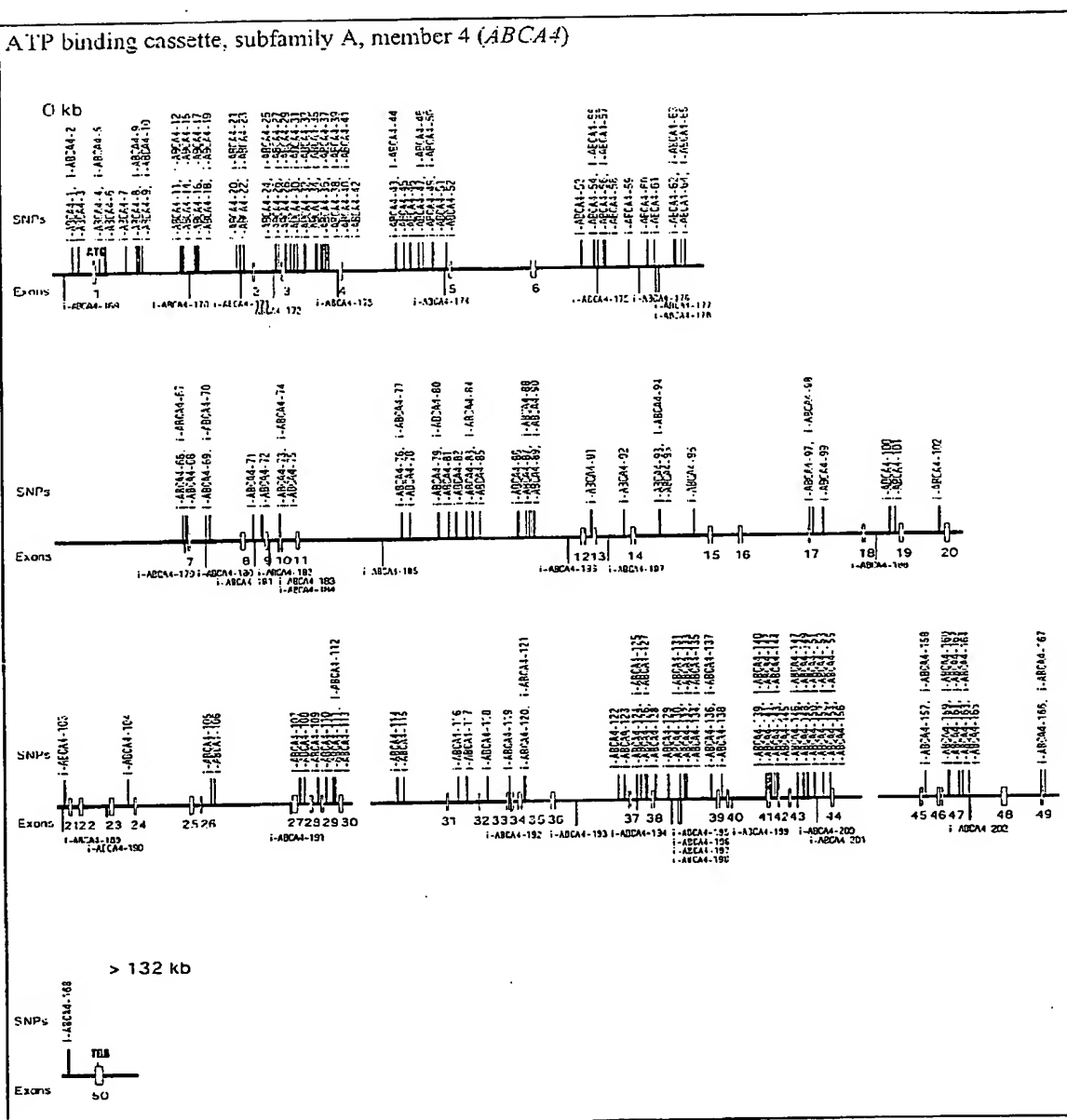
Fig. 117

*Carboxylesterase 1 (CES1)*

ACCESSION AC007602



ATP binding cassette, subfamily A, member 4 (ABCA4)





3

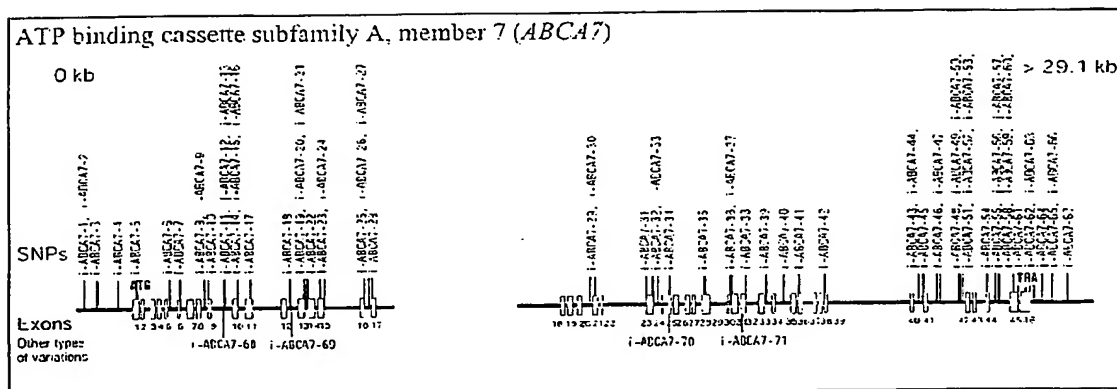


Fig. 120

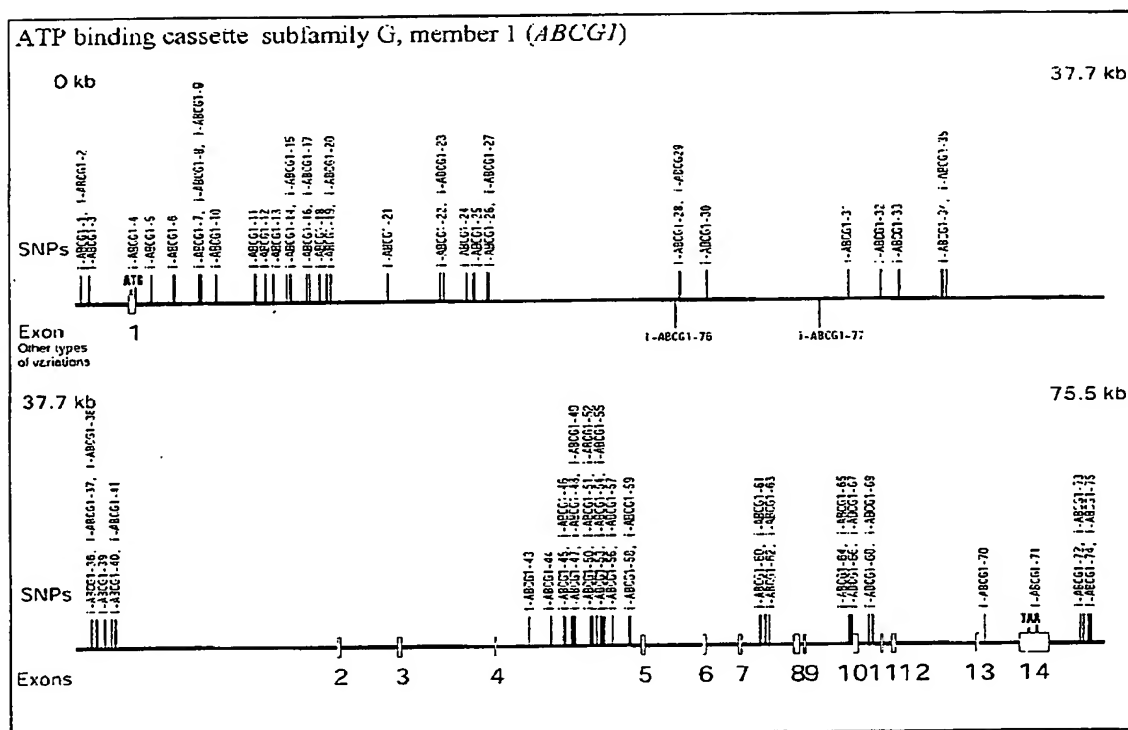


Fig. 121

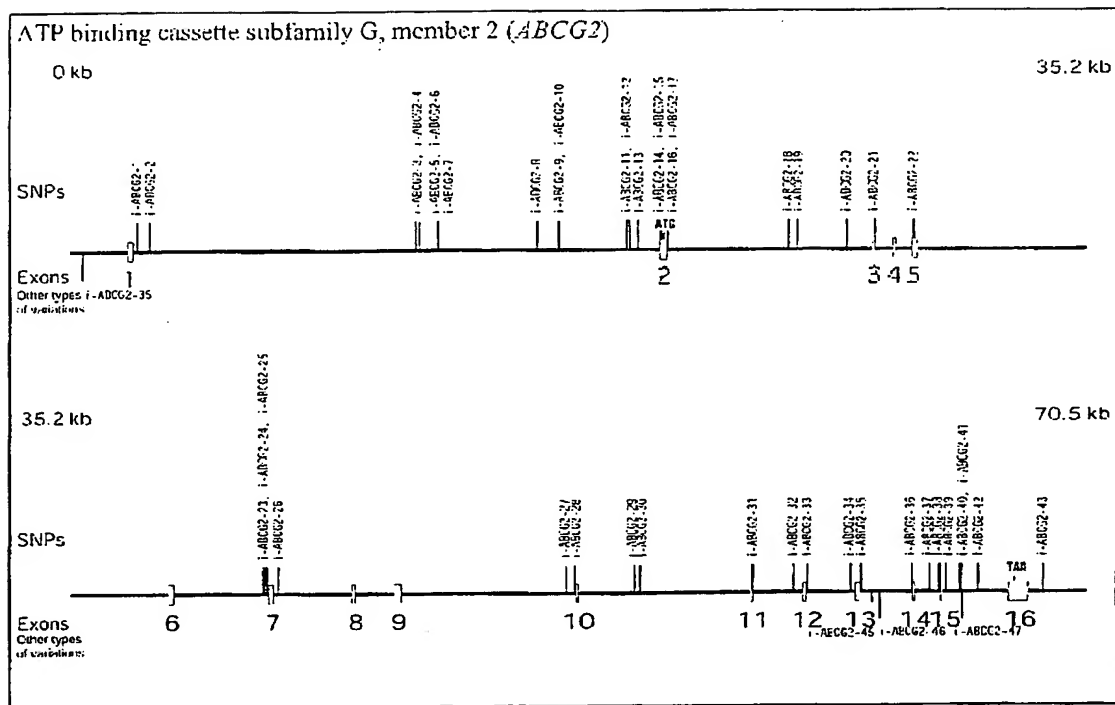


Fig. 122

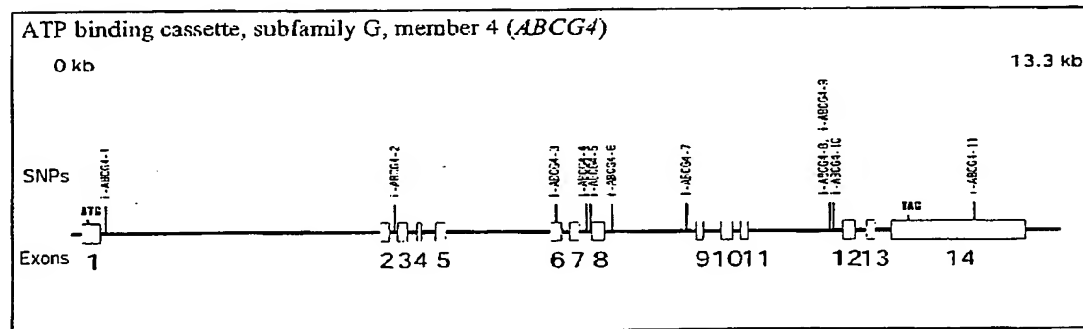


Fig. 123

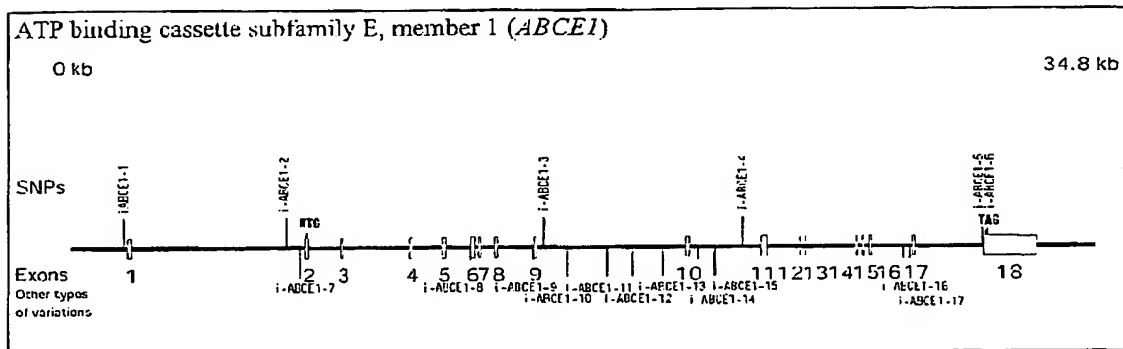


Fig. 124

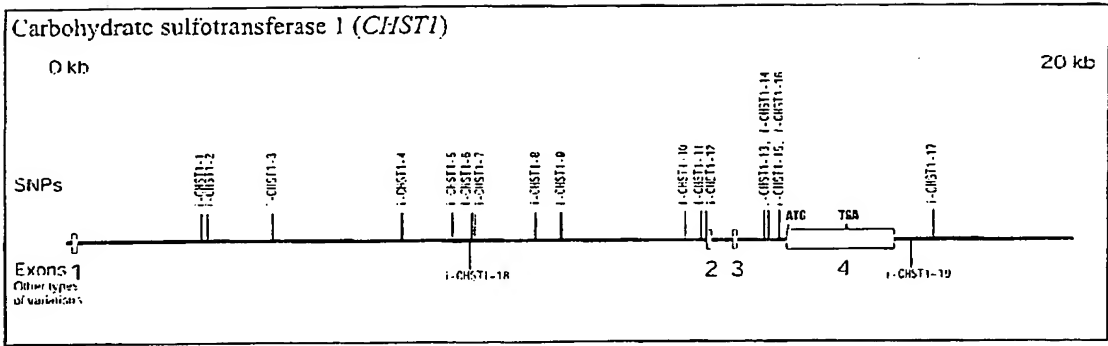


Fig. 125

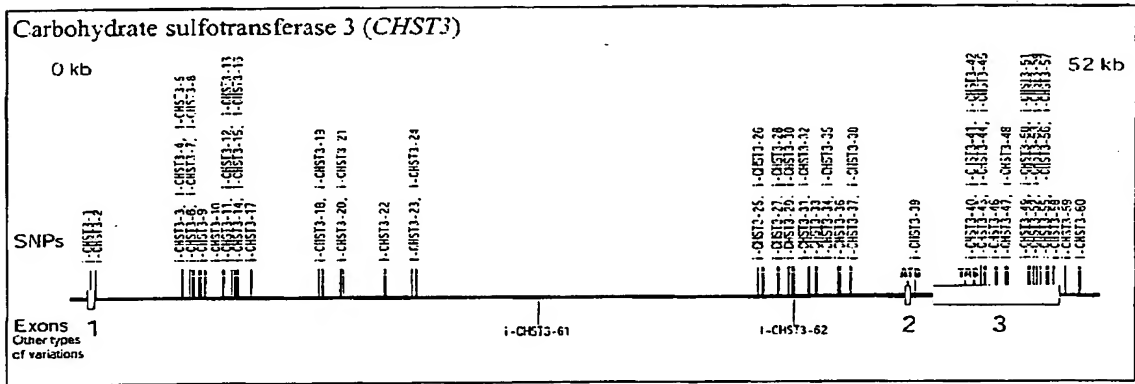


Fig. 126

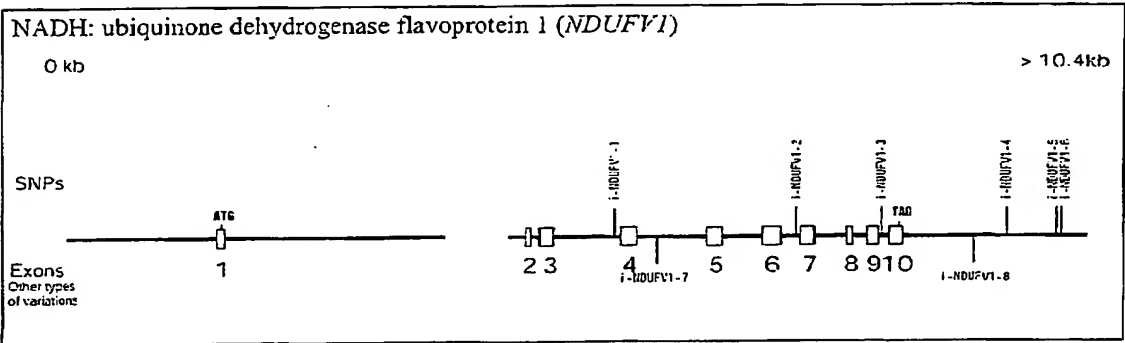


Fig. 127

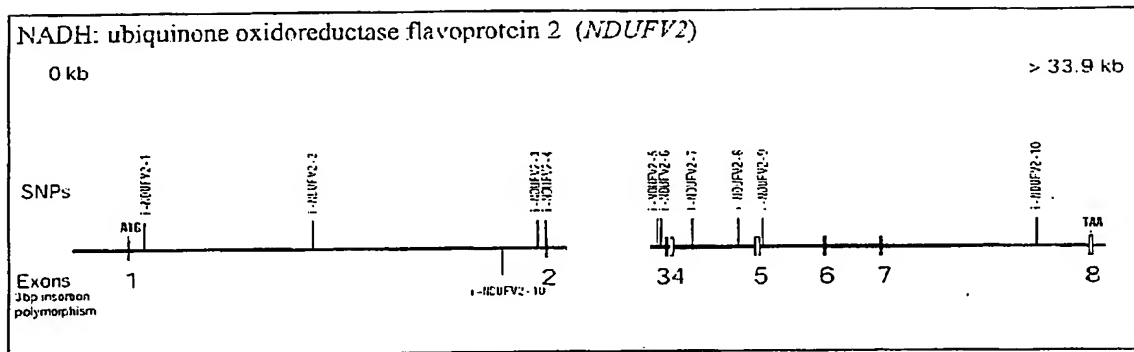


Fig. 128

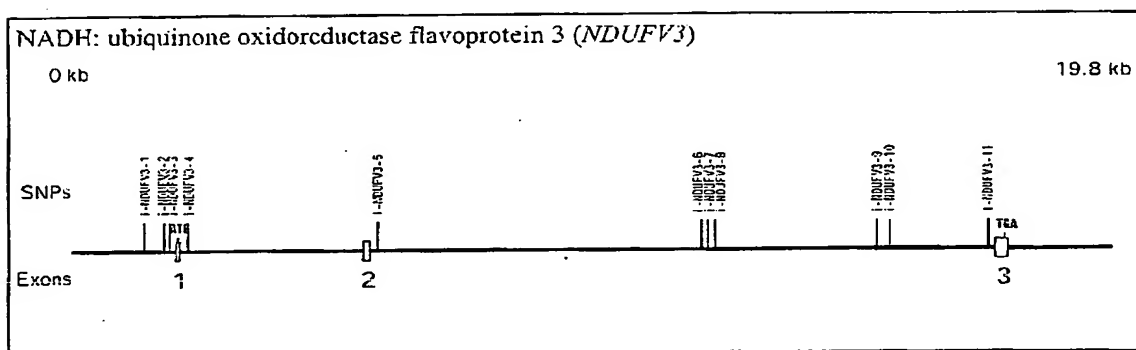


Fig. 129

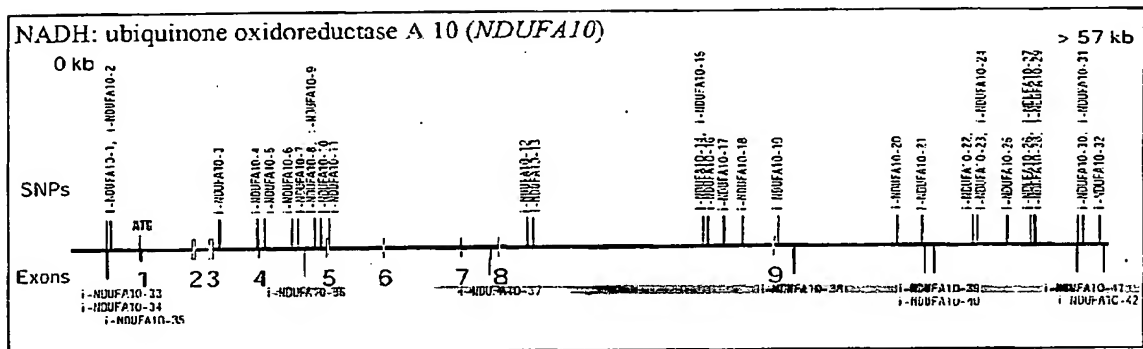


Fig. 130

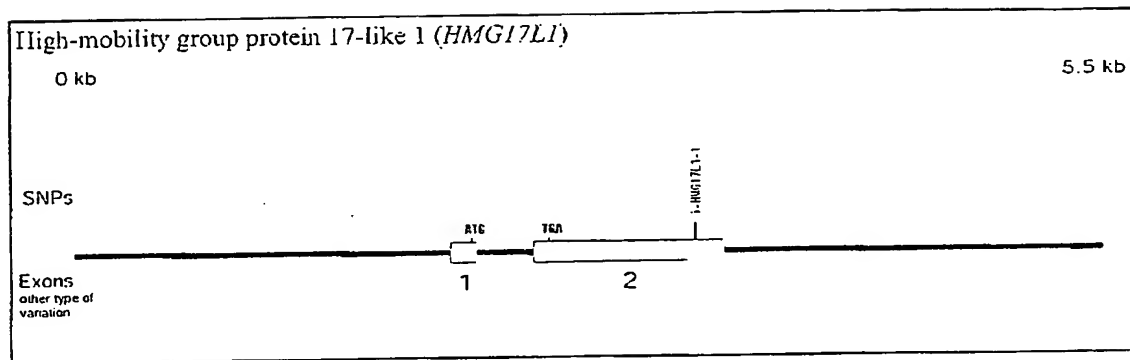


Fig. 131

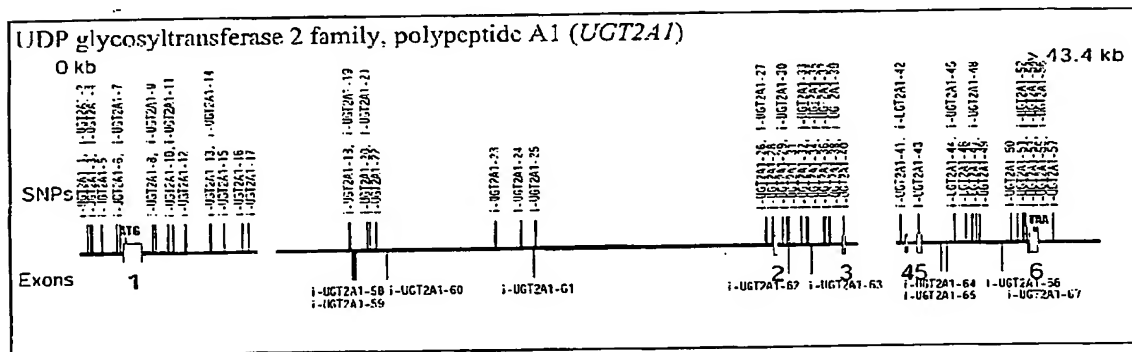


Fig. 132

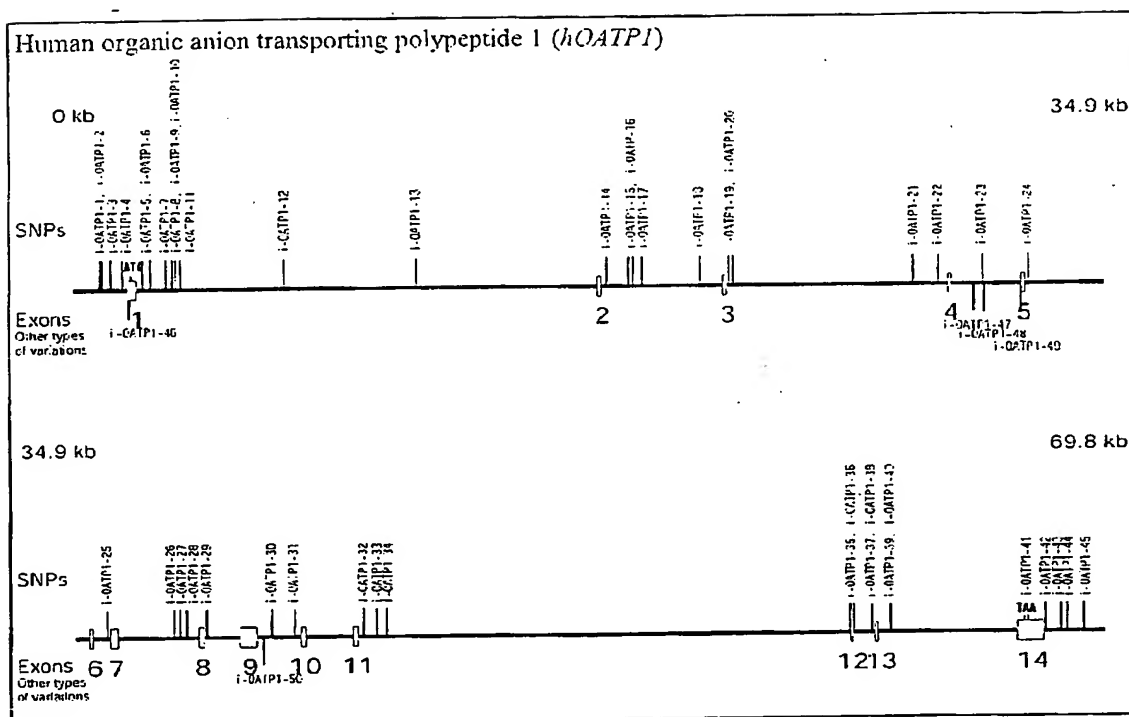


Fig. 133

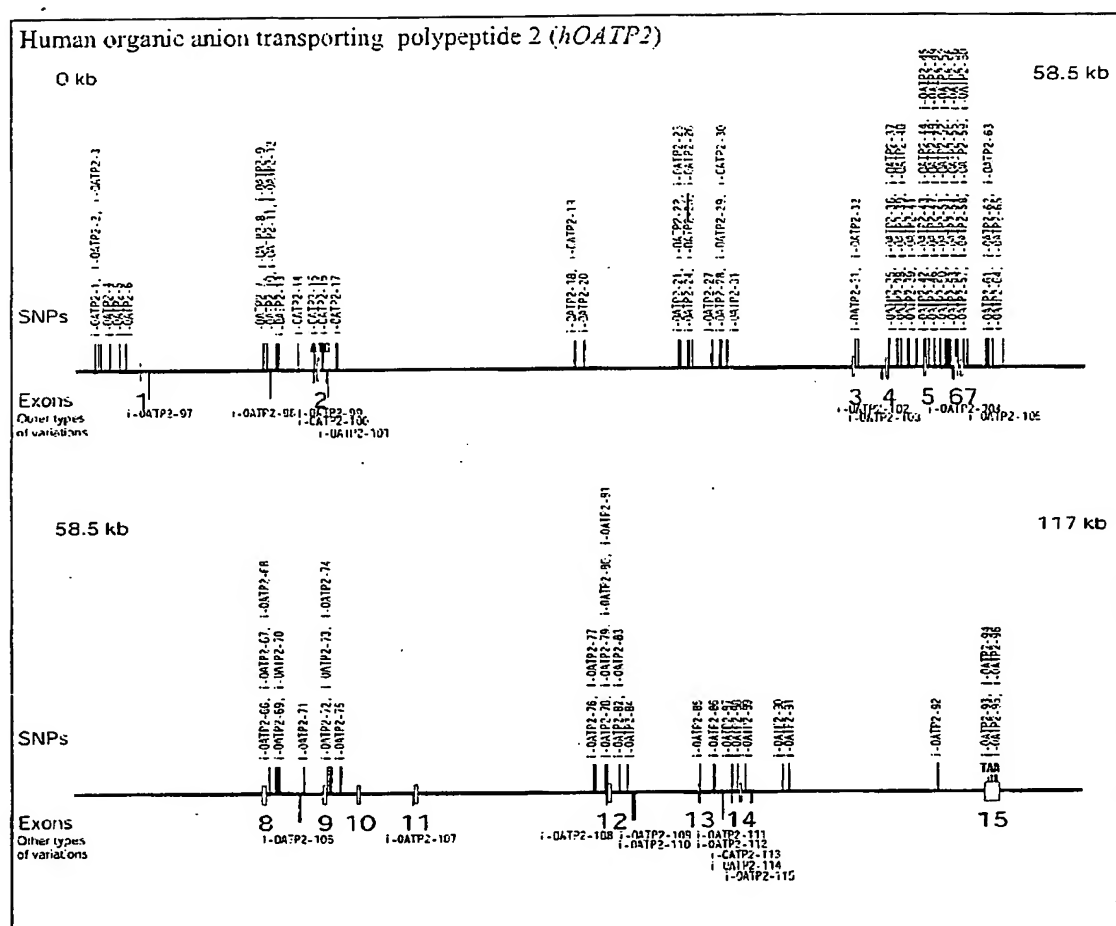


Fig. 134

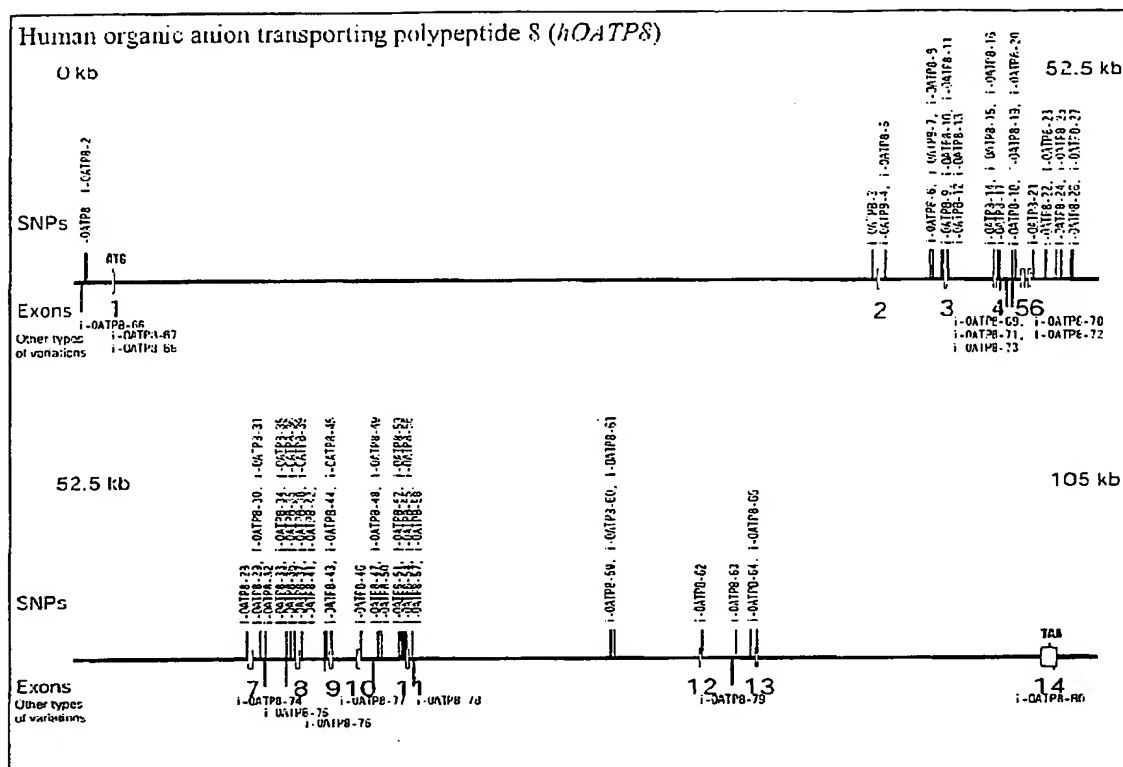


Fig. 135

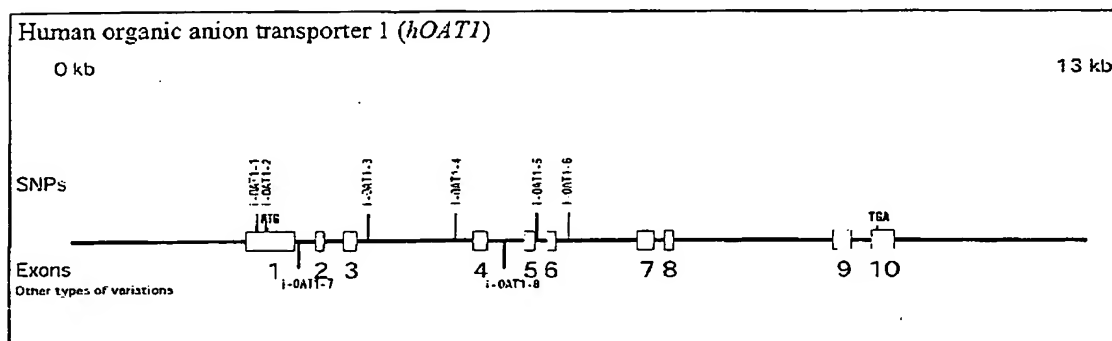




Fig. 136

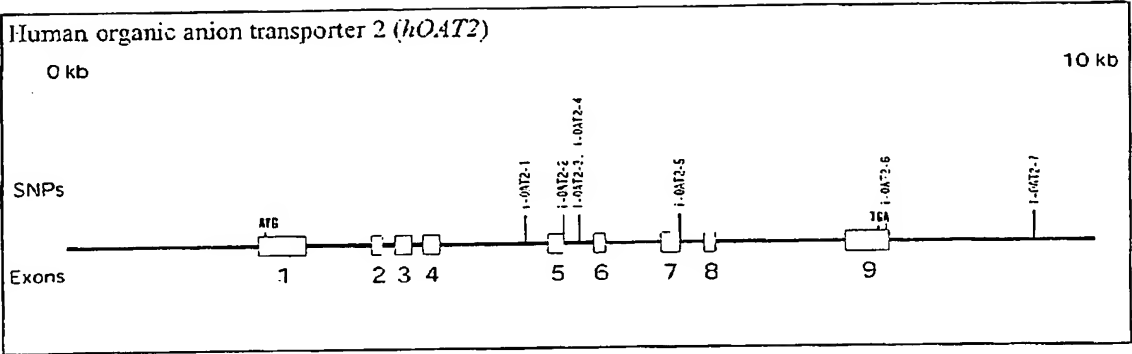


Fig. 137

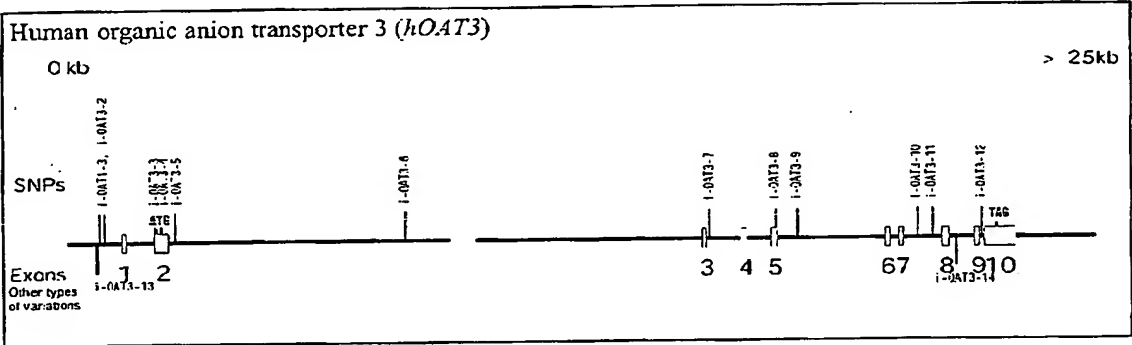


Fig. 138

*Aldehyde dehydrogenase 1 family, member A2 (ALDH1A2)*      ACCESSION AC025431  
AC012653

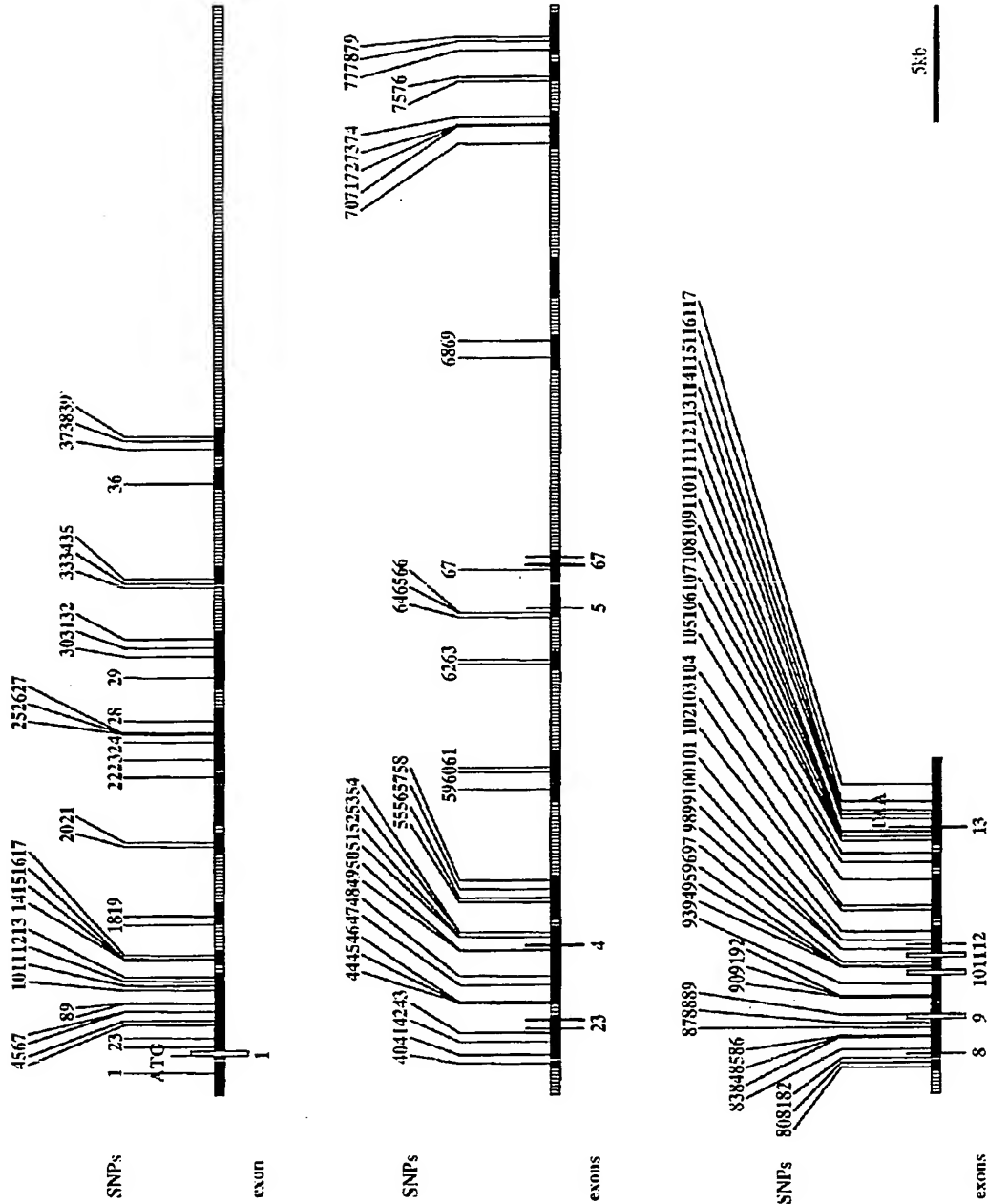


Fig. 139

*Aldehyde dehydrogenase I family, member A3 (ALDH1A3)*

ACCESSION AC015712

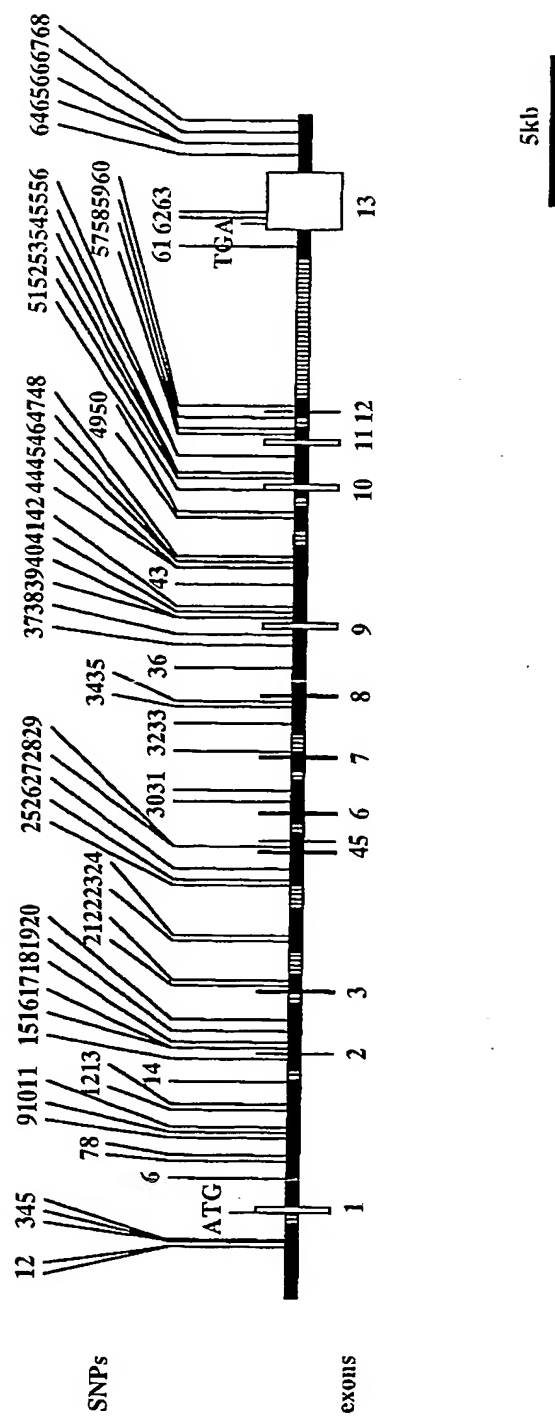


Fig. 140

*Formyltetrahydrofolate dehydrogenase (FTHFD /ALDH1L1)*

ACCESSION AC079848

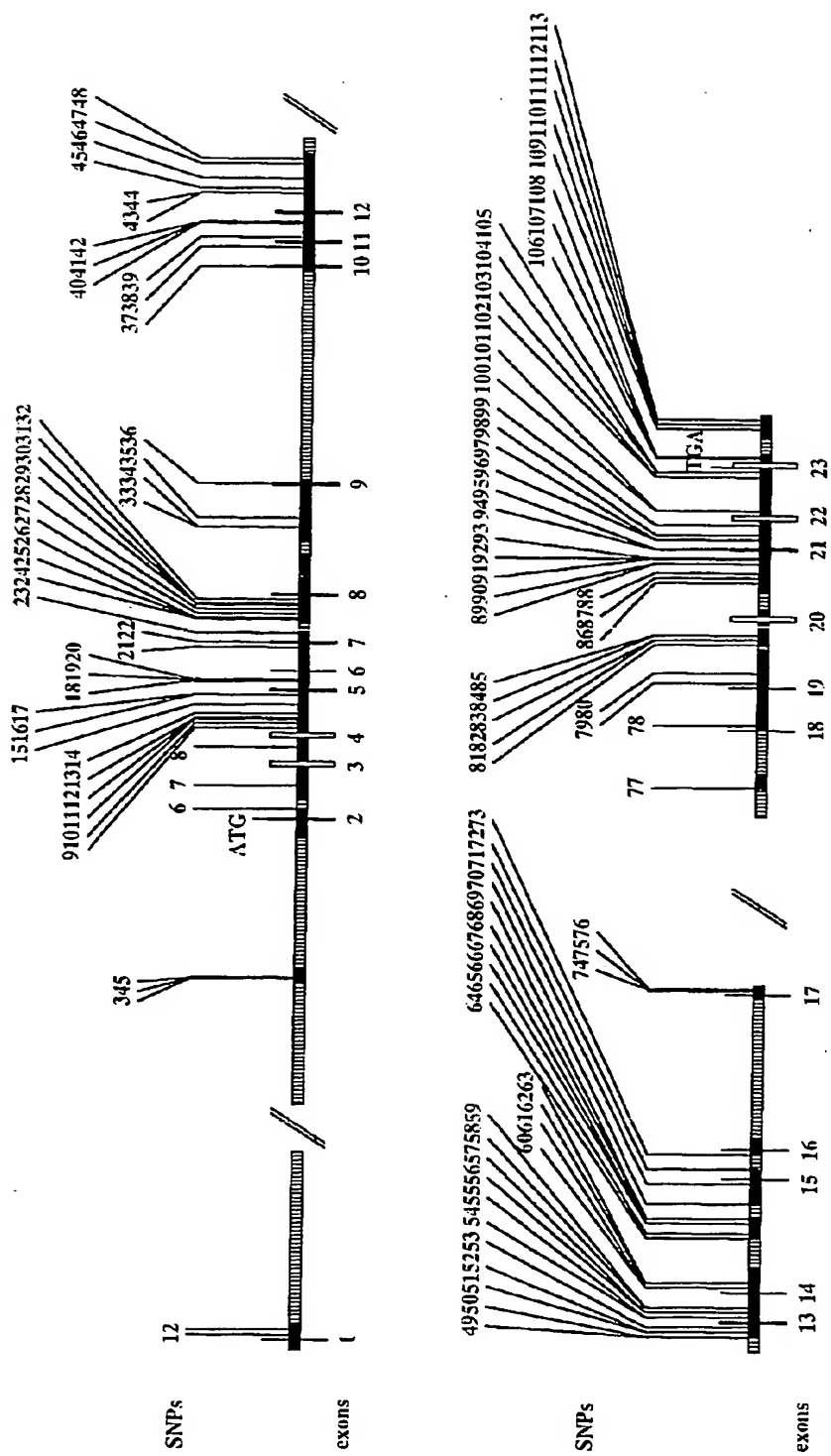


Fig. 141

*Cytochrome P450, subfamily IIIA, polypeptide 4 (CYP3A4)*

ACCESSION AF280107

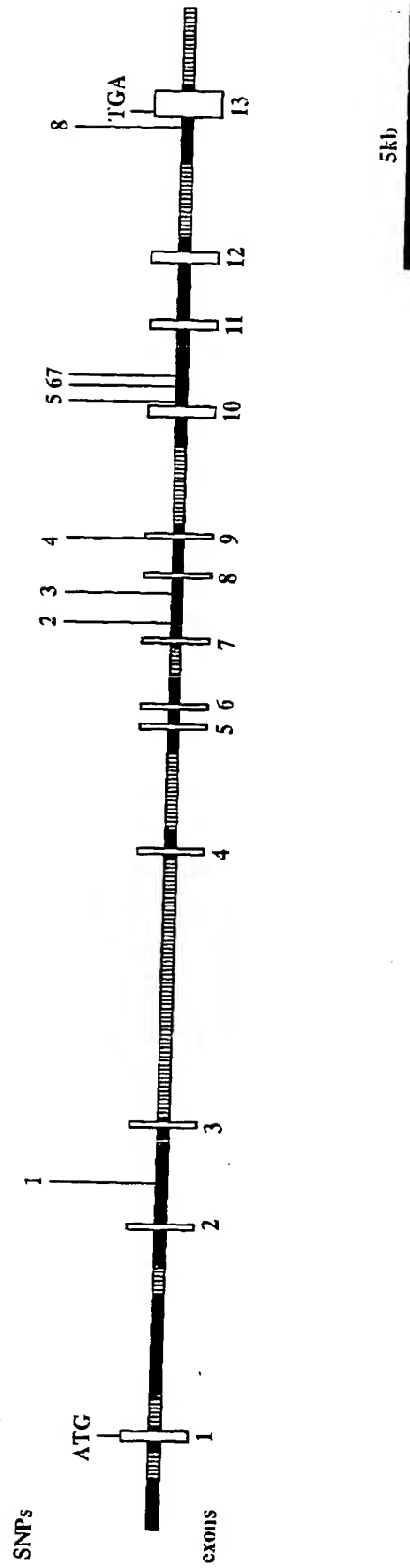
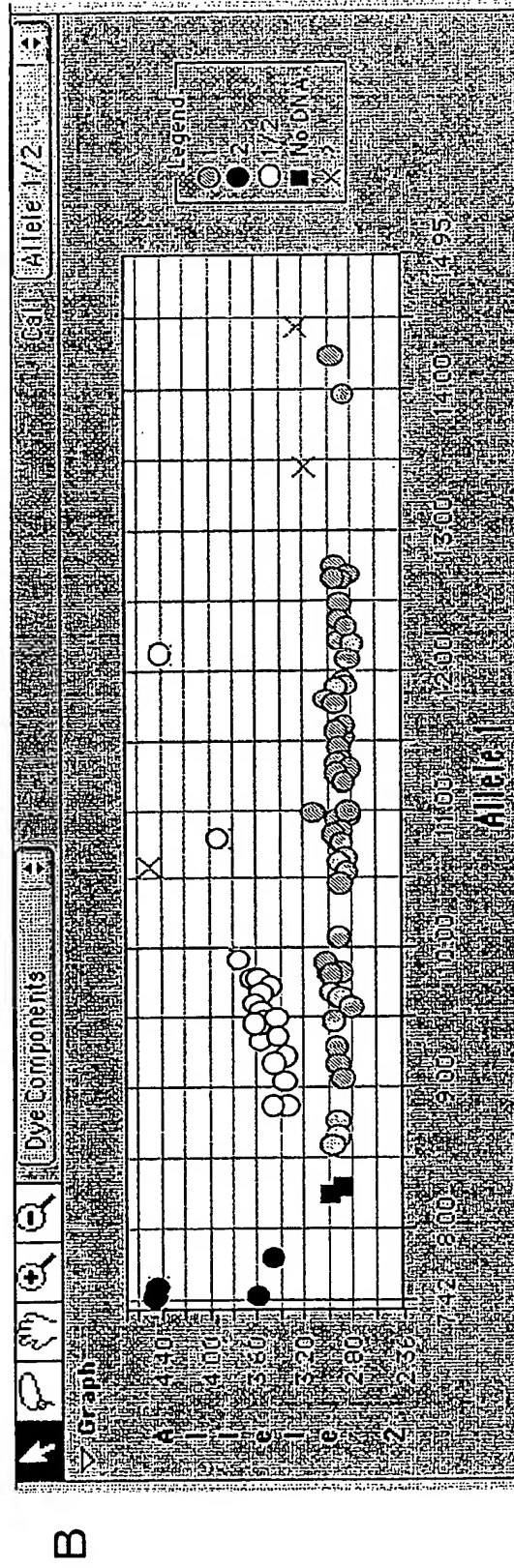
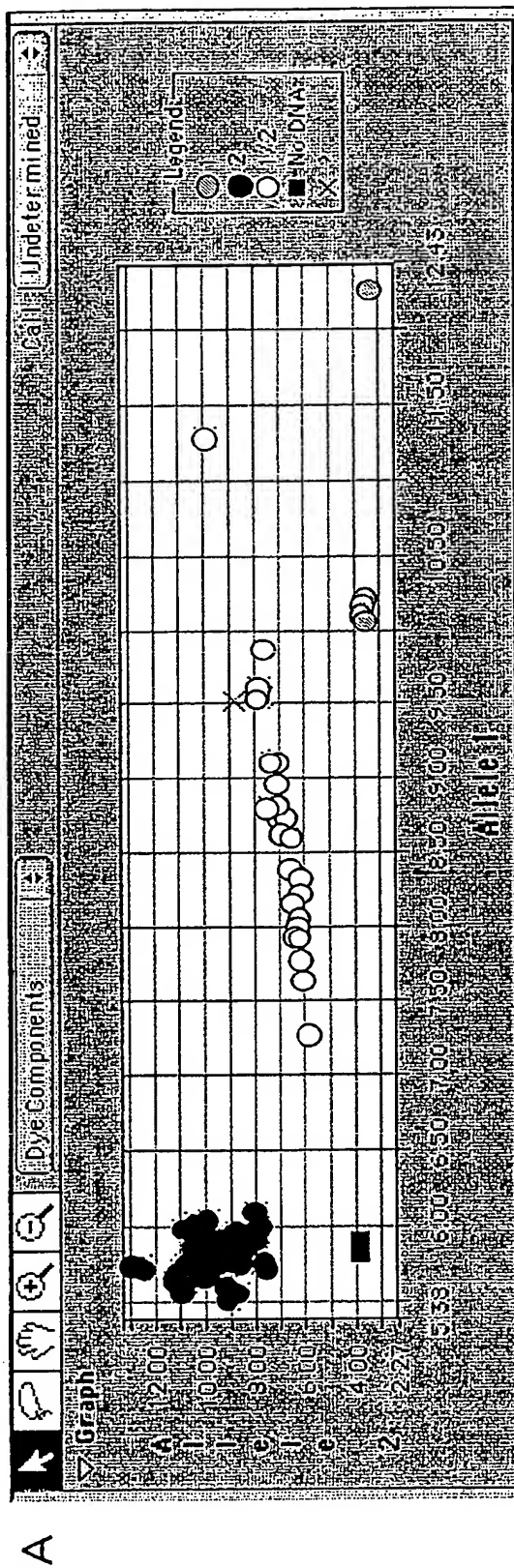


Fig. 142



【書類名】 特許願

【整理番号】 RJH13-090S

【提出日】 平成13年 8月27日

【あて先】 特許庁長官 殿

【国際特許分類】 G01N 33/00

【発明の名称】 遺伝子多型の検出方法

【請求項の数】 16

【発明者】

    【住所又は居所】 神奈川県横浜市青葉区あざみ野 1 - 1 7 - 3 3

    【氏名】 中村 祐輔

【発明者】

    【住所又は居所】 東京都国立市北 1 - 1 1 - 8

    【氏名】 関根 章博

【発明者】

    【住所又は居所】 神奈川県川崎市中原区田尻町 2 1

    【氏名】 飯田 有俊

【発明者】

    【住所又は居所】 東京都青梅市東青梅 5 - 1 0 - 6 河辺パークホームズ  
1 0 8

    【氏名】 斎藤 督

【特許出願人】

    【識別番号】 000006792

    【氏名又は名称】 理化学研究所

【特許出願人】

    【識別番号】 500056758

    【氏名又は名称】 中村 祐輔

【特許出願人】

    【識別番号】 501002471

    【氏名又は名称】 関根 章博

## 【特許出願人】

【識別番号】 501002482

【氏名又は名称】 飯田 有俊

## 【特許出願人】

【識別番号】 501002493

【氏名又は名称】 斎藤 督

## 【代理人】

【識別番号】 100091096

【弁理士】

【氏名又は名称】 平木 祐輔

## 【選任した代理人】

【識別番号】 100096183

【弁理士】

【氏名又は名称】 石井 貞次

## 【先の出願に基づく優先権主張】

【出願番号】 特願2000-399443

【出願日】 平成12年12月27日

## 【先の出願に基づく優先権主張】

【出願番号】 特願2001-135256

【出願日】 平成13年 5月 2日

## 【手数料の表示】

【予納台帳番号】 015244

【納付金額】 21,000円

## 【提出物件の目録】

【物件名】 明細書 1

【物件名】 図面 1

【物件名】 要約書 1

【包括委任状番号】 9503608

【プルーフの要否】 要



【書類名】 明細書

【発明の名称】 遺伝子多型の検出方法

【特許請求の範囲】

【請求項 1】 薬物代謝酵素をコードする遺伝子中に存在する遺伝子多型情報から、該遺伝子多型部位を含むように、又は薬物代謝酵素をコードする遺伝子を増幅したときの増幅断片中に前記遺伝子多型部位が含まれるように、オリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを作製し、得られるオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを用いて、目的の薬物代謝酵素をコードする遺伝子中の少なくとも 1 個の遺伝子多型を検出することを特徴とする遺伝子多型の検出方法。

【請求項 2】 遺伝子多型部位を含むオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーが、その 5' 末端若しくは 3' 末端又は中央の塩基が当該遺伝子多型部位となるように作製されたものである請求項 1 記載の検出方法。

【請求項 3】 遺伝子多型部位を含むオリゴヌクレオチドプローブが、薬物代謝酵素をコードする遺伝子とハイブリダイズし得る断片とハイブリダイズしない断片とが結合したものであって、前記遺伝子多型部位が、当該ハイブリダイズし得る断片の 5' 末端又は 3' 末端である請求項 1 記載の検出方法。

【請求項 4】 遺伝子多型部位を含むオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーが、配列番号 1～3360 に示す塩基配列のうち第 21 番目の塩基を含む少なくとも 13 塩基の配列又はこれに相補的な配列を有するものからなる群から選択される少なくとも 1 つである請求項 1～3 のいずれかに記載の検出方法。

【請求項 5】 遺伝子多型が、一塩基多型、複数個の塩基の欠失、置換若しくは挿入による多型、又は VNTR 若しくはマイクロサテライトによる多型である請求項 1～4 のいずれかに記載の検出方法。

【請求項 6】 請求項 1～5 のいずれかの方法により得られた検出結果から、当該薬物代謝酵素によって代謝される薬物の有効性及び安全性を評価することを特徴とする薬物の評価方法。

【請求項 7】 請求項 6 記載の評価方法により得られた評価を指標として、使用すべき薬物を選択することを特徴とする薬物のスクリーニング方法。

【請求項 8】 薬物代謝酵素をコードする遺伝子中に含まれる遺伝子多型情報と、被験者から採取した当該薬物代謝酵素をコードする遺伝子の遺伝子多型情報とを比較して、当該薬物代謝酵素によって代謝される薬物の有効性及び/又は安全性を解析し、得られる解析結果から使用すべき薬物を選択することを特徴とする薬物のスクリーニング方法。

【請求項 9】 遺伝子多型情報が表 1 に示されるものである請求項 1～8 のいずれかに記載の方法。

【請求項 10】 薬物代謝酵素が、エポキシドヒドロラーゼ、メチルトランスフェラーゼ、N-アセチルトランスフェラーゼ、スルホトランスフェラーゼ、キノンオキシドレダクターゼ、グルタチオン-S-トランスフェラーゼ、UDP-グリコシルトランスフェラーゼ、アルデヒドデヒドロゲナーゼ、アルコールデヒドロゲナーゼ、エステラーゼ、NDUF、チトクローム p450 (CYP) 及び ATP-結合カセットからなる群から選択される少なくとも 1 つである請求項 1～9 のいずれかに記載の方法。

【請求項 11】 配列番号 1～3360 に示される塩基配列又はこれに相補的な塩基配列からなる群から選択されるオリゴヌクレオチド。

【請求項 12】 薬物代謝酵素をコードする遺伝子中に存在する遺伝子多型情報から、該遺伝子多型部位を含むように作製されたオリゴヌクレオチド。

【請求項 13】 オリゴヌクレオチドの 5' 末端若しくは 3' 末端又は中央の塩基が、当該遺伝子多型部位となるように作製されたものである請求項 12 記載のオリゴヌクレオチド。

【請求項 14】 遺伝子多型部位を含むオリゴヌクレオチドが、薬物代謝酵素をコードする遺伝子とハイブリダイズし得る断片とハイブリダイズしない断片とが結合したものであって、前記遺伝子多型部位が、当該ハイブリダイズし得る断片の 5' 末端又は 3' 末端である請求項 12 記載のオリゴヌクレオチド。

【請求項 15】 オリゴヌクレオチドが、配列番号 1～3360 に示すいずれかの塩基配列のうち第 21 番目の塩基を含む少なくとも 13 塩基の配列又はこれに相補

的な配列を有するものである請求項12～14のいずれかに記載のオリゴヌクレオチド。

【請求項 1 6】 請求項11～15のいずれかに記載のオリゴヌクレオチドを含む遺伝子多型検出用キット。

【発明の詳細な説明】

【 0 0 0 1】

【発明の属する技術分野】

本発明は、遺伝子多型情報、遺伝子多型情報の検出方法、遺伝子多型を用いた薬物の評価方法、及び薬物のスクリーニング方法に関する。

【 0 0 0 2】

【従来の技術】

ヒトの姿形が千差万別であるように、30億からなる遺伝暗号も個人間で比較するとかなり多くの部位で異なっている。この遺伝暗号の違いを遺伝子多型（ポリモルフィズム）と呼んでおり、代表的な遺伝子多型として一塩基多型が知られている。

【 0 0 0 3】

一塩基多型（SNP:single nucleotide polymorphism）とは、個人間における1遺伝暗号の違いを意味する。ヒトの顔貌や体型が千差万別であるように、遺伝暗号である塩基配列も一人ひとりかなり多くの部位で異なっている。SNPは、その存在する位置によってcSNP(coding SNP)とgSNP(genome SNP)に分類され、cSNPには、さらにsSNP(silent SNP)、rSNP(regulatory SNP)及びiSNP(intron SNP)が含まれる。

【 0 0 0 4】

上記SNPは、多型マーカーとしての疾患の発症や増悪に関連する遺伝子を見つけるために有用であり、最終的に臨床分野において疾患のリスク診断や薬剤の使い分けなどに直接関係する。また、疾患の原因となっている物質を標的分子とした証拠に基づく薬剤開発は、世界的趨勢となっている。ある疾患に対して薬剤を投与した場合、患者の応答性は様々であり、著効を示すもの、有効性の低いもの、全く効果を示さないもののように、薬剤に対する応答性には大きな違いがある

。これは、症状が同じで同じ診断名であっても、その背景となっている疾患を起こしている経路が異なっていたり、あるいは薬剤の代謝速度が大きく異なっている可能性があるからである。従って、SNPなど遺伝子多型を参考にしながら、目的の疾患に応じた薬物の選択、治療法の開発（いわゆるオーダーメイド医療）が望まれる。

#### 【0005】

薬剤に対する応答性に加えて、時には致命的となるような強い副作用の問題も、医療従事者が対処していかなければならない大きな問題の一つである。これは、処方ミスなどによる過剰投与がなくても、時には思わぬ致命的な副作用に遭遇することがある。従って、薬剤の応答性に対しては、薬剤の代謝、薬剤の輸送、薬剤のレセプターなどによる薬剤応答性や副作用の強さを、SNPなどの遺伝子多型を参考にしながら決定することが望まれる。

#### 【0006】

##### 【発明が解決しようとする課題】

本発明は、遺伝子多型情報の検出方法とその情報に基づく薬物の有効性並びに安全性を評価するための方法、及び薬物のスクリーニング方法を提供することを目的とする。

#### 【0007】

##### 【課題を解決するための手段】

本発明者は、上記課題を解決するため鋭意研究を行った結果、薬物代謝酵素をコードする遺伝子中の遺伝子多型を見出し、これを用いて薬物と疾患との因果関係を評価することに成功し、本発明を完成するに至った。

#### 【0008】

すなわち、本発明は以下の通りである。

(1) 薬物代謝酵素をコードする遺伝子中に存在する遺伝子多型情報から、該遺伝子多型部位を含むように、又は薬物代謝酵素をコードする遺伝子を増幅したときの増幅断片中に前記遺伝子多型部位が含まれるように、オリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを作製し、得られるオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを用いて、目的の薬物

代謝酵素をコードする遺伝子中の少なくとも 1 個の遺伝子多型を検出することを特徴とする遺伝子多型の検出方法。

#### 【0009】

遺伝子多型部位を含むオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーとしては、その5'末端若しくは3'末端又は中央の塩基が当該遺伝子多型部位となるように作製されたものが挙げられる。また、薬物代謝酵素をコードする遺伝子とハイブリダイズし得る断片とハイブリダイズしない断片とが結合したものであって、前記遺伝子多型部位が、当該ハイブリダイズし得る断片の5'末端又は3'末端であるものも、遺伝子多型部位を含むオリゴヌクレオチドプローブに含まれる。さらに、配列番号 1～3360に示す塩基配列のうち第21番目の塩基を含む少なくとも13塩基の配列又はこれに相補的な配列を有するものからなる群から選択される少なくとも1つのヌクレオチドも、遺伝子多型部位を含むオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーに含まれる。上記遺伝子多型としては、一塩基多型、複数個の塩基の欠失、置換若しくは挿入による多型、又はVNTR若しくはマイクロサテライトによる多型が挙げられる。

#### 【0010】

- (2) 前記検出方法により得られた検出結果から、当該薬物代謝酵素によって代謝される薬物の有効性及び安全性を評価することを特徴とする薬物の評価方法。
- (3) 前記評価方法により得られた評価を指標として、使用すべき薬物を選択することを特徴とする薬物のスクリーニング方法。
- (4) 薬物代謝酵素をコードする遺伝子中に含まれる遺伝子多型情報と、被験者から採取した当該薬物代謝酵素をコードする遺伝子の遺伝子多型情報とを比較して、当該薬物代謝酵素によって代謝される薬物の有効性及び/又は安全性を解析し、得られる解析結果から使用すべき薬物を選択することを特徴とする薬物のスクリーニング方法。

#### 【0011】

上記検出方法、評価方法又はスクリーニング方法において、遺伝子多型情報としては、表1に示されるものを、また、薬物代謝酵素としては、エポキシドヒドロラーゼ、メチルトランスフェラーゼ、N-アセチルトランスフェラーゼ、スル

ホトランスフェラーゼ、キノンオキシドレダクターゼ、グルタチオン-S-トランスフェラーゼ、UDP-グリコシルトランスフェラーゼ、アルデヒドデヒドロゲナーゼ、アルコールデヒドロゲナーゼ、エステラーゼ、NDUF、チトクロームp450 (CYP) 及びATP-結合カセットからなる群から選択される少なくとも1つを例示することができる。

(5) 配列番号1～3360に示される塩基配列又はこれに相補的な塩基配列からなる群から選択されるオリゴヌクレオチド。

(6) 薬物代謝酵素をコードする遺伝子中に存在する遺伝子多型情報から、該遺伝子多型部位を含むように作製されたオリゴヌクレオチド。

### 【0012】

上記オリゴヌクレオチドとしては、その5'末端若しくは3'末端又は中央の塩基が、当該遺伝子多型部位となるように作製されたものが挙げられる。また、薬物代謝酵素をコードする遺伝子とハイブリダイズし得る断片とハイブリダイズしない断片とが結合したオリゴヌクレオチドであって、前記遺伝子多型部位が、当該ハイブリダイズし得る断片の5'末端又は3'末端となるように作製されたオリゴヌクレオチドも、本発明のオリゴヌクレオチドに含まれる。さらに、配列番号1～3360に示すいずれかの塩基配列のうち第21番目の塩基を含む少なくとも13塩基の配列又はこれに相補的な配列を有するものも、本発明のオリゴヌクレオチドに含まれる。

(7) 前記オリゴヌクレオチドを含む遺伝子多型検出用キット。

以下、本発明を詳細に説明する。

### 【0013】

#### 【発明の実施の形態】

本発明は、薬物代謝酵素に関する遺伝子多型情報を用いて、被検対象の遺伝子多型を検出する方法に関する。また、本発明は、薬物代謝酵素によって代謝される薬物の有効性及び安全性の有無又は強弱を解析することを特徴とし、この解析結果により、疾患と薬物との関係を評価するものである。複数人が同じ疾患に罹患している場合であっても、薬物代謝酵素遺伝子の遺伝子多型情報は個々の患者ごとに異なることが多い。従って、その異なる遺伝子多型情報から薬物代謝との

関係を導き、どのような遺伝子多型情報を有する場合に特定の薬物の有効性が認められるのか認められないのか、また、どのような遺伝子多型情報を有する場合に副作用が出やすいのか出にくいのか、その薬物の有効性及び/又は安全性を評価する。その結果、ある疾患に対してどのような薬物を使用すべきなのか、遺伝子多型情報からそれぞれの患者ごとに適した投薬（オーダーメイド医療）が可能となる。

#### 【0014】

##### 1. 遺伝子多型

遺伝子多型には、一塩基多型、インサクション/デリーション型多型、及び塩基配列の繰り返し数が異なっていることにより生じる多型が含まれる。一塩基多型（SNP）とは、一般にはある遺伝子領域の特定の1個の塩基が他の塩基に置換することによる多型を意味するが、本発明においては、上記置換による多型のほか、当該1個の塩基が欠失したことによる多型、当該1個の塩基にさらに1個の塩基が挿入したことによる多型も含めることとする。また、インサクション/デリーション型多型とは、複数の塩基（例えば2個～数十塩基）が欠失や挿入をしていることによる多型をいい、数百塩基～数千塩基が欠失や挿入されているものも存在する。さらに、塩基配列の繰り返し数が異なっていることにより生じる多型は、2～数十塩基の配列が繰り返されており、その繰り返し回数が個人間で異なっているものをいう。繰り返しの単位が数塩基から数十塩基のものをVNTR(variable number of tandem repeat)といい、2～4塩基単位程度のものをマイクロサテライト多型という。VNTRやマイクロサテライト多型においては、この繰り返し回数の違いが個々人のアレル（対立遺伝子）で異なることにより、バリエーションを獲得している。

#### 【0015】

##### 2. 薬物代謝酵素

「薬物代謝酵素」とは、医薬品を含む外来性異物の生体内における構造変換を触媒する酵素群の総称である。また、一部の内在性物質であっても、治療目的で投与される場合にはその代謝に関わる酵素群のことを指す。薬物代謝酵素は、薬物の吸収、代謝、排泄に関わるものであるため、その酵素の多型はその酵素の発

現量（転写や翻訳）や活性を変化させ、結果として未変化体や代謝物の血中濃度などに違いが生じる。

本発明において、遺伝子多型解析の対象となる遺伝子により発現される薬物代謝酵素としては、以下のものが挙げられる。

#### 【0016】

エポキシドヒドロラーゼ(epoxide hydrolase)  
メチルトランスフェラーゼ(methyltransferase)  
N-アセチルトランスフェラーゼ(N-acetyltransferase)  
スルホトランスフェラーゼ(sulfotransferase)  
キノンオキシドレダクターゼ(quinone oxidoreductase)  
グルタチオン-S-トランスフェラーゼ(glutathione S-transferase)  
UDP-グリコシルトランスフェラーゼ(UDP-glycosyltransferase)  
アルデヒドデヒドロゲナーゼ(aldehyde dehydrogenase)  
アルコールデヒドロゲナーゼ(alcohol dehydrogenase)  
エステラーゼ (esterase)  
ユビキノンデヒドロゲナーゼ(ubiquinone dehydrogenase : NDUF)  
チトクローム P450 (CYP)  
ATP-結合カセット(ATP-binding cassette)

#### 【0017】

その他の酵素

(1) エポキシドヒドロラーゼは、エポキシドをトランス開裂機構で加水分解し、1,2-グリコールを生成させる酵素であり、例えばミクロソームエポキシドヒドロラーゼ1、細胞質エポキシドヒドロラーゼ2などが含まれる。

#### 【0018】

(2) メチルトランスフェラーゼは、アミノ基、水酸基、チオール基などにメチル基転移を触媒する酵素であり、例えば以下のものが挙げられる。

カテコール-O-メチルトランスフェラーゼ  
ヒスタミン N-メチルトランスフェラーゼ  
フェニルエタノールアミンN-メチルトランスフェラーゼ



ホスファチジルエタノールアミンN-メチルトランスフェラーゼ  
ニコチンアミドN-メチルトランスフェラーゼ  
グアニジノアセテートN-メチルトランスフェラーゼ  
アセチルセロトニン-O-メチルトランスフェラーゼ

**【 0 0 1 9 】**

(3) N-アセチルトランスフェラーゼは、アミノ基、スルホンアミド基、ヒドラジン基にアセチル基転移を触媒する酵素であり、例えば以下のものが挙げられる。

アリールアミンN-アセチルトランスフェラーゼ1、2  
アリールアルキルアミン N-アセチルトランスフェラーゼ  
サッカロミセス・セレビシエ(*Saccharomyces cerevisiae*)のN-アセチルトランスフェラーゼ相同体

L1 細胞接着分子

**【 0 0 2 0 】**

(4) スルホトランスフェラーゼは、硫酸抱合に関与し、フェノール類、ステロイド類、アリールアミン、胆汁酸などに硫酸基転移を触媒する酵素であり、例えば以下のものが挙げられる。

スルホトランスフェラーゼ1A1、1A2、1A3、1C1、1C2、2A1、2B1  
甲状腺ホルモンスルホトランスフェラーゼ  
チロシルタンパク質スルホトランスフェラーゼ1、2  
スルホトランスフェラーゼ-関連タンパク質3  
エストロゲンスルホトランスフェラーゼ  
セレブロシドスルホトランスフェラーゼ  
HNK-スルホトランスフェラーゼ-1  
炭水化物スルホトランスフェラーゼ2、4、5

**【 0 0 2 1 】**

(5) キノンオキシドレダクターゼは、キノン類のo-キノンやp-キノンの還元を触媒する酵素であり、例えば以下のものが挙げられる。

NAD(P)H: キノンオキシドレダクターゼ1

NRH: キノンオキシドレダクターゼ2

キノンオキシドレダクターゼ相同体

【 0 0 2 2 】

(6) グルタチオン-S-トランスフェラーゼは、グルタチオンとの抱合を触媒する酵素であり、例えば以下のものが挙げられる。

グルタチオン-S-トランスフェラーゼ Mu1、Mu2、Mu3、Mu4、Mu5

グルタチオン-S-トランスフェラーゼ Z (zeta)

グルタチオン-S-トランスフェラーゼ  $\Pi$  (pi)

グルタチオン-S-トランスフェラーゼ シータ1(theta 1)、シータ2

ミクロソームグルタチオン-S-トランスフェラーゼ1

ミクロソームグルタチオン-S-トランスフェラーゼ1-様1

ミクロソームグルタチオン-S-トランスフェラーゼ2、3

グルタチオン-S-トランスフェラーゼ Haサブユニット1、2

グルタチオン-S-トランスフェラーゼ A3、A4

【 0 0 2 3 】

(7) UDP-グリコシルトランスフェラーゼは、第I相薬物代謝経路である水酸基、カルボキシル基、アミノ基、チオール基などの官能基導入後にその官能基にグルクロン酸供与を触媒する酵素であり、例えば以下のものが挙げられる。

UDP-グリコシルトランスフェラーゼ1

UDP-グリコシルトランスフェラーゼ2ファミリーポリペプチド A1, B7, B10, B4, B11, B15, B17

UDP-グリコシルトランスフェラーゼ8

ドリシル-ジホスホオリゴサッカライド-タンパク質グリコシルトランスフェラーゼ

【 0 0 2 4 】

(8) アルデヒドデヒドロゲナーゼは、アルデヒドをカルボン酸に変換する酵素であり、例えばアルデヒドデヒドロゲナーゼ1~10などが含まれる。

【 0 0 2 5 】

(9) アルコールデヒドロゲナーゼは、アルコールをアルデヒド又はケトンに変

換する酵素であり、例えば以下のものが挙げられる。

アルコールデヒドロゲナーゼ1~7

ヒドロキシ-CoAデヒドロゲナーゼ

短鎖アルコールデヒドロゲナーゼファミリー遺伝子

【0026】

(10) エステラーゼは、エステル部分を加水分解する酵素であり、例えば以下のものが挙げられる。

アリールアセトアミドデアセチラーゼ

グランザイムA (granzyme A)

グランザイムB

インターロイキン17

ユビキチンカルボキシルターミナルエステラーゼL1, 3

カルボキシルエステラーゼ1

リパーゼA

エステラーゼD/ホルミルグルタチオンハイドロラーゼ

カルボキシルエステルリパーゼ

【0027】

(11) NDUF (ubiquinone dehydrogenase) は、ミトコンドリアの呼吸鎖、すなわちエネルギー代謝を担う酵素であり、例えばNADHユビキノンデヒドロゲナーゼ1 $\alpha$  サブユニット1~10などが含まれる。

【0028】

(12) CYP(チトクローム P450) は、第I相薬物代謝を司り、薬物に酸素原子を導入する酵素であり、例えばチトクロームp450(CYP)1A1, CYP1A2, CYP2A6, CYP2B6, CYP2C8, CYP2C18, CYP2C9, CYP2C19, CYP2E1, CYP2D6, CYP2E1, CYP2F1, CYP3A3, CYP3A4, CYP3A7, CYP3A43, CYP4A11, CYP4B1, CYP4F2, CYP4F3, CYP4F8, CYP11B1, 2, CYP17, CYP19, CYP21A2, CYP27などが含まれる。

【0029】

(13) ATP-結合カセットは、トランスポーターで薬物の吸収や組織内濃度を調節するものであり、例えば以下のものが挙げられる。

ATP-結合カセットサブファミリーAメンバー1~6、8

ATP-結合カセットサブファミリーBメンバー1~11

ATP-結合カセットサブファミリーCメンバー1~6、8~10

ATP-結合カセットサブファミリーDメンバー1~4

ATP-結合カセットサブファミリーEメンバー1

ATP-結合カセットサブファミリーFメンバー1~3、

ATP-結合カセットサブファミリーGメンバー1

#### 【0030】

(14) その他の酵素には、ガンマ-グルタミルトランスフェラーゼ1、トランスグルタミナーゼ1、ジヒドロピリミジンデヒドロゲナーゼなどが含まれる。

#### 【0031】

### 3. 遺伝子多型情報

遺伝子多型情報は、一般的遺伝子多型検出法を利用して得ることができる。例えば、PCRによる方法、アレル特異的オリゴヌクレオチドを鋳型としてハイブリダイゼーションを行う方法（例えばTaqMan PCR法、インベーター法）、プライマー伸長反応を利用する方法、シーケンス法、MALDI-TOF/MS法、DNAチップ法等が採用される。PCR法やシーケンス法はいずれの遺伝子多型の検出法にも使用することができ、他の方法は、主としてSNPの検出法に使用することができる。

#### 【0032】

TaqMan PCR法とは、蛍光標識したアレル特異的オリゴとTaq DNAポリメラーゼによるPCR反応とを利用した方法である (Livak, K. J. Genet. Anal. 14, 143 (1999); Morris T. et al., J. Clin. Microbiol. 34, 2933 (1996))。インベーター法とは、SNPのそれぞれのアレルに特異的な2種類のレポータープローブ及び1種類のインベータープローブの鋳型DNAへのハイブリダイゼーションと、DNAの構造を認識して切断するという特殊なエンドヌクレアーゼ活性を有する酵素によるDNAの切断を組み合わせた方法である (Livak, K. J. Biomol. Eng. 14, 143-149 (1999); Morris T. et al., J. Clin. Microbiol. 34, 2933 (1996); Lyamichev, V. et al., Science, 260, 778-783 (1993)等)。

#### 【0033】

また、プライマー伸長反応を利用する方法として、例えばSniPer法を採用することもできる。SniPer法とは、RCA(rolling circle amplification)法と呼ばれる手法を基本原理とするものであり、環状の一本鎖DNAを鋳型としてDNAポリメラーゼがその上を移動しながら相補鎖DNAを連続して合成していくものである。この方法によれば、DNA増幅が起こった場合に生じる発色反応の有無を測定することによってSNPを判定する (Lizardi, P. M. et al., Nature Genet., 19, 225-232 (1998); Piat, A. S. et al., Nature Biotech., 16, 359-363 (1998))。

シーケンス法とは、遺伝子多型を含む領域をPCRにて増幅させ、Dye Terminatorなどを用いてDNA配列をシーケンスすることで遺伝子多型（特に一塩基多型）の頻度を解析する方法である。

#### 【 0 0 3 4 】

MALDI-TOF/MS法とは、質量分析機 (mass spectrometer) を用いた方法で、基本的には異なる一塩基の質量の違いを利用してSNPジェノタイピングする方法である。PCR増幅を利用した方法とmultiplexを利用した方法がある (Haff, L. A., Smirnov, I. P., Genome Res., 7, 378- (1997) ; Little, D. P. et al. Eur. J. Clinical Chem. Clin. Biochem., 35, 545- (1997) ; Ross, P., et al. Nat Biotechnol., 16, 1347- (1998))

DNAチップ法とは、ガラスなどの基盤上に多種類のDNAプローブを整列化し、固定し、その上で標識DNAのハイブリダイゼーションを行い、プローブ上の標識（蛍光など）シグナルを検出する方法を利用して、ハイブリダイゼーションで完全マッチと一塩基ミスマッチを分別検出する方法である。

本発明の方法において使用することができる遺伝子多型情報、特にSNP情報は表1の通りである。

#### 【 0 0 3 5 】

【表 1】

遺伝子名	No.	存在位置	配 列	配列 番号
ABC82	1	5'flanking - 673	agctaaagagtcacaaagcacc G/C ctttttcaccagcctcgcg	1
ABC82	2	5'flanking - 646	ccaccagcctcgctgcctg T/G tcccttcacggacactctag	2
ABC82	3	5'flanking - 563	ttgcaagcgttgctgctac A/C ggagacctccctcgctccc	3
ABC82	4	5'flanking - 236	gctttgcgcgcggcctaac G/T tgttagggcagatctgccc	4
ABC82	5	Intron3 + 408	aaggaaactgaggccaagac C/T ctaaatgctgaaactgcaca	5
ABC82	6	Exon4 + 153	oocctaccatggtcaacotg A/G tccctcgctctgcttttc	6
ABC82	7	Intron4 + 289	gtattcttttagcatccaag G/T ggcatagctgtgtctcttc	7
ABC82	8	Intron4 + 291	attcttttagcatccaaggg C/G catagctgtgtctctcttc	8
ABC82	9	Intron5 - 63	ttcttcaggttaatactg C/T gttctttgtgtccctcca	9
ABC82	10	Intron7 - 185	gtctctgcccgtgtcttgc G/T gttctttctatctctactcc	10
ABC82	11	3'flanking + 71	agcgcaacttttcagctgcgg G/A tgtctctctttttatcatcc	11
ABC82	12	3'flanking + 129	aaotgcaacacottttccot T/C aagcttttaattcctatga	12
ABC82	13	3'flanking + 459	cattcaggaggccagggtc G/A tgtgacgtcgacagttgtg	13
ABC84	1	exon3 + 3	aacacccttattttatagat C/T caatgactgagtcagaatt	14
ABC84	2	intron3 + 45	cagcactctcactatacca T/C gotctgcttaaggtctot	15
ABC84	3	intron3 + 498	actcaaatagggttaggg C/T agagacaattcaatcacagac	16
ABC84	4	intron3 + 515	gagcagagacaattcaatc A/G gacagaagctcttagatgaga	17
ABC84	5	intron6 + 1030	tagttttgccatgagaatt G/C aaaaagttagataggtgtt	18
ABC84	6	intron6 + 1437	gttaagcctgcttcaatc G/A ttgcttatctctgttctta	19
ABC84	7	intron6 + 2449	ttgactatgcagcacgttga G/A catcttctctctctgtgt	20
ABC84	8	intron7 + 451	ccttgctgacactgtgtgt A/C taagtttgcttattatagt	21
ABC84	9	intron7 + 530	agtagagacaggctggcgt C/G acaccggacagagctaactg	22
ABC84	10	intron7 - 152	aacagatcatgaatgaag T/C tgttaagtattgaaggcct	23
ABC84	11	exon8 + 40	aggataaattgtttatgtc G/T ctgggtaccatcatggccat	24
ABC84	12	intron8 + 130	ctggttgactccagatcca T/C agaagggttgtaaaattct	25
ABC84	13	intron8 + 248	aatacacagggaagcttctaa A/G taagtaagggaagtcactct	26
ABC84	14	intron8 + 531	ctaaggagtgaatgattca A/G taagtcccttggaactcacc	27
ABC84	15	intron8 + 4240	ctgaggttccagcttatctc T/A tagagatgtttacttagtct	28
ABC84	16	intron8 + 4343	tgttagaagaaaaagggt C/T atattacaagagggtctgac	29
ABC84	17	intron8 + 4677	cccaagatatcttcataact G/C tooatagtcctagggtgco	30
ABC84	18	intron9 + 113	tttaccagattcacctatt A/G ttatcatttttgcctccaaa	31
ABC84	19	intron9 + 982	tgtcctatacagttttgtt T/A taagttagtaaatgatta	32
ABC84	20	intron11 + 457	tccagcttggtgacagagt A/G agacttcactcctcaaaaaaa	33
ABC84	21	intron11 + 1337	tactcttggggagccttca C/G cagggttggtcagatetac	34
ABC84	22	exon12 + 3	tgtttcttttctgccagt A/T ctctcgccatttagtgaaa	35
ABC84	23	intron12 + 1288	cagaccacactaacctcag T/C tggacctcaggatgcagt	36
ABC84	24	intron13 + 208	tgtgataagaaaatagcat G/A tggtagaccatttgtaa	37
ABC84	25	intron13 + 988	cagtcagtttggaagctgc T/C accctttcttacttctca	38
ABC84	26	intron13 + (1413-1414)	ttatcttcaactatgttt (T) ctcaagttatgtatgaat	39
ABC84	26	intron13 + (1413-1414)	ttatcttcaactatgttt ctcaagttatgtatgaat	40
ABC84	27	intron13 + 1931	cttgcaaatgtgtctctcc A/G caaaaaaaagggaaggat	41
ABC84	28	intron23 + 784	agtatctctaaactcttgc T/C atgcaggaaaaattattta	42
ABC84	29	intron25 + 158	gaatatatttactgtattaa T/C gtctagaacttaaatataag	43
ABC84	30	intron25 + 2920	ctgagcttctctatacatc T/A ttccattcctcggaatgtgt	44
ABC84	31	intron29 + 411	cttctcttaccttgaaatt A/C ggctctcgaaactttgacttt	45
ABC84	32	intron32 + 458	agaaaaatgaattgcctac T/C gagtaactctgaagacaca	46
EPHX1	1	intron1 + 110	tgcaaatgtgtcttactag C/T ttctagtgcataaaatattg	47
EPHX1	2	intron1 + 143	aaatattggtgagctcttc G/A ctgtgtctggcgaagtcacca	48
EPHX1	3	intron1 + 1097	aatccagagaggagataga T/G tggaaagttcaagggtggaca	49
EPHX1	4	intron1 + 1717	ttccaagacagagcgagg T/C gctgctggggcgtggtttgc	50
EPHX1	5	intron1 + 1772	aactcgatgctttctctcc G/T totgggtcctaactgaagt	51
EPHX1	6	intron1 + 2054	gaatgtacacaggcaacact A/G tggacacagaagtagatta	52
EPHX1	7	intron2 + 1414	atttccaaaatctgtttgg G/T gtaactgaacacttgggaa	53
EPHX1	8	exon3 + 174	tacccctcaottcaagactaa G/A attgaaggtatgtttgaaa	54
EPHX1	9	intron3 + 6583	ctgtcaatccatgaagg T/C ggcggggcactaagggtgg	55
EPHX1	10	intron4 + 34	agaggttccataactgccc G/A tctctgccaaagggtggccc	56
EPHX1	11	intron4 + 63	aagggtggggccgtgttcc C/T aooaggtctctctccggcg	57
EPHX1	12	intron5 + 154	gcagtcctcgagcgacgtt G/A ctggatcctcctgtctgta	58
EPHX1	13	intron5 + 276	tgttgaccacagctctggga T/C agccctgagcagaactcccc	59
EPHX1	14	exon6 + 130	gctgtgagatgtgtgccc C/T gtcaaggagaaggtattcta	60

遺伝子名	No.	存在位置	配列	配列番号
EPHX1	15	intron8 + 206	gggtccctggtcccgggcgg C/A cctcagtagcgtccccagt	61
EPHX1	16	intron8 + 353	tggccctccagaaaagaga A/G ggcctcagtagggggagag	62
EPHX1	17	3'flanking + 708	aggtgcagactaatgcactc A/G gccttgagaggtgagagag	63
EPHX2	1	5'flanking - (523-522)	aaagtcactggatatgcccc (C) tccccgcccccaacacgg	64
EPHX2	1	5'flanking - (523-522)	aaagtcactggatatgcccc tccccgcccccaacacgg	65
EPHX2	2	5'flanking - 522	aaagtcactggatatgcccc T/C cccccgcccccaacacgg	66
EPHX2	3	5'flanking - 521	aaagtcactggatatgcccc G/T cccccgcccccaacacgg	67
EPHX2	4	5'flanking - 516	actggatatgcccccccc G/C ccccccaacacggcttatg	68
EPHX2	5	5'flanking - 515	ctggatatgcccccccc G/C ccccccaacacggcttatg	69
EPHX2	6	intron1 - 74	tggctgcttctcaatgaata T/C gaacagtgctgtttccatg	70
EPHX2	7	intron3 + 72	ggcattaggtcagaatcca T/C tgaagtgaagcttgagatca	71
EPHX2	8	intron4 + 473	gtgtgtctctactttaactc A/G caaaaggtgattgaatggag	72
EPHX2	9	intron5 + 276	caagagtggtgattcaagg C/T catcctgacctcactttga	73
EPHX2	10	intron8 + 8	tctgctcctcccggtgggtg T/C gctgtcttgacagctgttta	74
EPHX2	11	intron9 + 1573	atgtcgtgaagactgatga C/T gatggacggctgcaactgctc	75
EPHX2	12	intron10 + 207	gaacaggatggagatgact T/C gtttattgtcttttaatga	76
EPHX2	13	intron12 + 911	tgaagagacctcgacatgct G/T catccacatactacagga	77
EPHX2	14	intron12 + 2425	atctctcagctgagcaaac G/T gagcctcagaggccttaac	78
EPHX2	15	intron12 + 2460	ttaaccccaactgcccgaag G/A ccaggtagcatgattgggtca	79
EPHX2	16	intron12 - 281	aagtcctttcaagagattat T/C ataagtagtaacttotoatt	80
EPHX2	17	intron12 - 288	agattattataagtagtacc T/G tctcattataggaatallga	81
EPHX2	18	Exon13 + 50	cctgagctcgagctttcaaaa G/T cctcttcagaggaagcgatg	82
EPHX2	19	intron13 + 1739	ttgtcgtgaacagggtttca G/T atgagcatatttctttgta	83
EPHX2	20	Exon14 + 33	atgcataaagctctggaagc G/A ggaagagacatgcttggga	84
EPHX2	21	intron14 + 314	ggattgagagcttaccctca T/C gggggtcacctcgtatgc	85
EPHX2	22	intron14 + 878	attcccttattcctcacac C/T gtctgtcactcattcattca	86
EPHX2	23	intron14 + 948	gcacaggctggatgaagc T/C ggggctgcatgctcagctac	87
EPHX2	24	intron15 + 259	agagggttttcaactcttt C/T agtcattgctcctcagagaa	88
EPHX2	25	intron16 + 459	tctcatttgtcaagcagaa G/C atgagtttccaatctctggg	89
EPHX2	26	intron16 + 645	gtaagtgaacaaactgctac G/A tgcagagcttctgccaagc	90
EPHX2	27	intron16 + 985	gtcattatcatcatatgacc G/A atgaaaatgacaaactgca	91
EPHX2	28	3'flanking + 12	aggtggccttacacacatct T/C gcattgagtgagcattgtt	92
EPHX2	29	3'flanking + 374	tgttcacgggaatgcacgg G/T atgggagtagccctttccc	93
EPHX2	30	3'flanking + 544	tagccacctgcctttctccc G/A gcttccttagcagagtttc	94
GAMT	1	intron1 + 429	ctcggaaagctgagctcagg G/A agacagctgtcccggtg	95
GAMT	2	3'flanking + 626	cactgacctccttgcctga G/A agaagccggctcctgtgt	96
NNMT	1	5'flanking - 228	ataatttctcagcagctc A/T agtgcctcctctggtctaca	97
NNMT	2	intron1 + 44	ccccactaatgtgagtcata T/C agatggagctcagggcag	98
NNMT	3	intron1 + 149	ggataaaacgaatttgtt A/G tagcattccacagtttaca	99
NNMT	4	intron2 + 158	agataggcccatgtgtgtgc G/A ttttagtaaatgtgtatg	100
NNMT	5	intron2 + 433	gctgtagccatccaagccta T/C agaacttgctgtgagtg	101
NNMT	6	intron2 - 3064	atcatctgactggttaagttc C/T agttctgtgtaactcaagt	102
NNMT	7	intron2 - 260	atttcatggagggaagtcca T/C ggtagaagcaggctgctagg	103
NNMT	8	3'flanking + 71	ggctcagtggttgggccc A/G tggttcatctaggacgggac	104
PNMT	1	5'flanking - 390	aagaggtgaatggctcggg G/A gcttgagagaagagatggg	105
PEMT	1	exon2 - 4	agctcagcagacotcctggc C/T gtggtggtagctcctttcc	106
PEMT	2	intron4 + 39	actgtccagacgggagatc C/T cactgcttggtagagccccc	107
PEMT	3	intron4 + 1317	acgtgccacagctggcccca G/A cctcctgacatgggctctg	108
PEMT	4	intron4 + 1355	ctggagccaggctgcagccg A/C agtgcctggccatcctggcg	109
PEMT	5	intron4 + 5925	gtccaggaactgtggcccta C/T gtgggagctccagctctca	110
PEMT	6	intron4 + 6028	ggcagtggtccaaaggaccag G/C atggactcctcttctcacc	111
PEMT	7	intron4 + 6078	atctgtaccctgoggaactc C/T acctggcttctgtccatcac	112
PEMT	8	intron4 + 6089	cgcgagctctacctggttc A/G tgcctacacccccgcagat	113
PEMT	9	intron4 + 6379	tcaggtgtccctcctcat G/A cctcctcacctcgcctctc	114
PEMT	10	intron4 + 7339	tgtaaaggaatcctgccaaga C/T ggcagatgcacacggggtca	115
PEMT	11	intron4 + 7619	ctcctgcacatgtgtccag A/G gaggaaaggcatttgacagg	116
PEMT	12	intron4 + 8858	ggcatgtgtgtgtgtgtgt T/G gtgtgtgagtggtgtgtgt	117
PEMT	13	intron4 + 9029	tttctggaccagaagcgtc G/A tctctgtccagggcctttg	118
PEMT	14	intron4 + 9056	gccagggcctcttgcacttg C/T gggaaagctgagctgagctg	119
PEMT	15	intron4 + 9512	ctgagctgggcagcagcatt A/G ctctgtgtgtgtgtgtgt	120

遺伝子名	No.	存在位置	配列	配列番号
PEMT	16	intron4 + 9523	agcagcattactctgtgtgc T/C gctggcaactggcctgtggg	121
PEMT	17	intron4 + 9622	gacaaagtgtacaacaaggt G/A tctcgaactgggtcagctca	122
PEMT	18	intron4 + 10776	ccattctgggtctcttttg G/A aggtgaatgaaattccatg	123
PEMT	19	intron4 + 10912	tctgccccactttgtctcaga G/C gtgcaacaaggccttcagga	124
PEMT	20	intron4 + 11590	ggcactgtgctgatgcaga G/C gtgtgtctctctctcctgcag	125
PEMT	21	intron4 + 12090	ggccagggcacccctaccag G/C ctgagtcacacctgtccagc	126
PEMT	22	intron4 + 12263	taaccgccttcacagatgga G/A cgggtgtctatggactta	127
PEMT	23	intron4 + 12448	tctgtgccctctctctgtt G/A tagttcttggtctaaatc	128
PEMT	24	intron4 + 12730	tggaccagtgcggccacca C/T ggcacaaggacctgtgttc	129
PEMT	25	intron4 + 13240	gggtccaggccacacagcgg T/C cccagtacacctgtcgttt	130
PEMT	26	intron4 + 13494	tcogtggaaotcagagatgg T/C acctccctgcaggtggggc	131
PEMT	27	intron4 + 13817	aaotctccctctgtctgag A/G cagatcttgagcctcggcc	132
PEMT	28	intron4 + 14773	ccgocctgtgtctatgcgc C/T ctatgoototoactgootgg	133
PEMT	29	intron4 + 14951	gtcctgaggccctccacac G/A gagootgggtgcctccaca	134
PEMT	30	intron4 + 16896	gotgtactgtttggagao T/C ggtcttggcgggacctgtg	135
PEMT	31	intron4 + 19439	ccaggagcctctgaggcagc G/A gggcttctcaaacacacac	136
PEMT	32	intron4 + 19559	attttgtcagcatgtaoct C/T cttttcatatgaagcaagg	137
PEMT	33	intron4 + 20051	acggcactgcgggagccagc A/G catotgcagacgatttgat	138
PEMT	34	intron4 + 20816	tggactctctggcgtccatc C/T agocacttcagtgcagactg	139
PEMT	35	intron4 + 21196	ggotgtgggctcctgggat C/G atcgtgacagggtttagtgg	140
PEMT	36	intron4 + 21528	acaggttggagocaggcctc G/T ggggttggcgggctggagc	141
PEMT	37	intron4 + 21596	ccgttccctgtctctctggc C/T gtacagaaaagtgtccact	142
PEMT	38	intron4 + 22672	agcctccactgcttctggc C/T tggggggggggggcgggtc	143
PEMT	39	intron4 + 22713	tctaagctgtctcttttgt A/T ctgaaaaccaaacaccttct	144
PEMT	40	intron4 + 23010	tgcggggcagcggggaggga G/A ggcgaggtgttcccccaagt	145
PEMT	41	intron4 + 23588	gtcaggcgcctgcacccc C/T gcagccaaagtctggcggga	146
PEMT	42	intron4 + 23627	gacactgccctgagccagga C/T ggtgaggtgggacgcttcc	147
PEMT	43	intron4 + 23941	tgggggttgggactctaca G/A agggaggtggactcacgggg	148
PEMT	44	intron4 + 24091	gacacctcttcaactgtcagc G/T ctgagacacgcccctgcct	149
PEMT	45	intron4 + 25348	caggccagttggaatectac G/A tagatgtaagcatctcagc	150
PEMT	46	intron4 + 25603	taaggacttaacactgatgc G/A tgatgaaaattccaacagca	151
PEMT	47	intron4 + 31540	cctccagggtggcaggaaacac T/C gtgaggagcatgcaactgc	152
PEMT	48	intron4 + 31637	gtggctgggagccaggac G/A gtgagggtctcaaggtgtg	153
PEMT	49	intron4 + 31642	ctggagcggcaggacgtga G/A gggcttcaaggtgtgtttg	154
PEMT	50	intron4 + 35593	ggaggagctgaaagagctgg G/A gctcgggatcaggtgttca	155
PEMT	51	intron4 + 35647	actttgaggaccacccgac C/A tctcctgtgtgaggagagc	156
PEMT	52	intron4 + 35862	tccagtggtgtctctgtcc C/T cgtctcagccagcactcag	157
PEMT	53	intron4 + 35882	ccgtctcagccggagcaotca T/G cggccagggttggctgactc	158
PEMT	54	intron4 + 37141	ccacagccggatgccttga T/C acttctcagctgcaggctg	159
PEMT	55	intron4 + 38862	tggagagaccacctcagaca G/G caaggacgggcatgccatgg	160
PEMT	56	intron4 + 38872	acctcagacagcaaggacgg G/T catgccatgggtccggcag	161
PEMT	57	intron4 + 39140	atgtctcaaatctccctccc C/T gggaaatctaggcacaggtc	162
PEMT	58	intron4 + 39635	caggccaggagcagggtgg G/T cctctctcagaggcagggc	163
PEMT	59	intron4 + 39713	actctgagcatgctgtctcc C/T tcttctttccagggcagca	164
PEMT	60	intron4 + 40436	cctgtgtgtcttgggaccc G/A gaggcagacagaggagcct	165
PEMT	61	intron4 + 47485	acaatgactgttggagccct C/T gaggcaggtgtgtcactgg	166
PEMT	62	intron4 + 48131	actggggatcctgaatccc G/A cctcctgatgccagtgagc	167
PEMT	63	intron4 + 48558	cacagtgtgaactgttaggc C/G acagccacatcttgcggag	168
PEMT	64	intron4 + 48702	gagatggggcggttcggga G/A gcaaaagcaggagggagaa	169
PEMT	65	intron4 + 50302	gcattgtcatggcagaggc T/C gttcccatctgagtggacc	170
PEMT	66	intron4 + 54102	ggccgctgtctcctgcagcc A/T tgggtctctctggcagttct	171
PEMT	67	intron4 + 54220	cccaggacagatcttctcc G/A ccagacgtctcttctgct	172
PEMT	68	intron4 + 54371	gcagataatgtcagctggg G/A tgcattgtgtttgtctccc	173
PEMT	69	exon5 + 79	tggcctgtactctctaagc G/C tcacctcctgtcctgaac	174
PEMT	70	intron5 - 6796	ggaggaaagtcagcttcttac A/C gatggtgtctccagcttcc	175
PEMT	71	intron5 - 6636	ttttctctctacacttttg T/C gttcagaggcagaggtgtgc	176
PEMT	72	intron5 - 6448	gttggocaggototgacag G/A acctcgggaccagctcctg	177
PEMT	73	intron5 - 5218	ggagccotgggtgaagaagc G/G ttacgaccaaggcctggagg	178
PEMT	74	intron5 - 4824	ggacaggccgggggttggc G/A gctgcatgaaggaggaggg	179
PEMT	75	intron5 - 4249	tcaccagagtgattctctg C/A ggcaggtgcttgggtagcc	180



遺伝子名	No.	存在位置	配列	配列番号
PENT	76	intron5 - 4230	gaggcagggtgcctgggtag C/T cactgggcgggtccatgag	181
PENT	77	intron5 - 4182	ggagagtaagggtggggg G/A cacttaggacagggaagctg	182
PENT	78	intron5 - 3369	ccagggtgggcccgtgtcct G/C tggcctggtgtgtggccag	183
PENT	79	intron5 - 2625	cagggaagctgggcccgtgaa C/T gagctgggttttgggcccac	184
PENT	80	intron5 - 1200	attattgtgagcatgggaag A/T gcacatttggtcacacatgt	185
PENT	81	intron6 + 606	gcctggctgacagcccccac A/G tgaccctgatgatggcagca	186
PENT	82	intron6 + 1229	tttggctcaggaaaggggac G/A gacccaggagcgtctggat	187
PENT	83	intron7 + 716	atgagatgtgtctccccgg G/C ggtcagaggacctgcccgtc	188
PENT	84	intron7 + 1537	ctctgggggacgcataagcc G/A cctccagaggacatcagcca	189
PENT	85	intron7 + 1718	gggtotcaggtgtctgagc T/C ccccgagcatgtaggaccca	190
PENT	86	intron7 + 2695	ggctttgggggaocctggac C/T catttctagaaaacagcctt	191
PENT	87	intron8 + 140	ccagggtcccccaggtcagag C/T ggccatgttagcttacaatg	192
PENT	88	3'flanking + 179	tccttaggtgagctcaggg C/T tcacctggccatggccatgg	193
PENT	89	3'flanking + 394	gatgaacatgtcattctctaa A/G tgaatggccttctactgacc	194
GSTM3	1	5'flanking - 144	ccacagccggcctttagtgc G/T cctggcagcggccctgtga	195
ALDH5	1	5'flanking - 2808	cggttcaotgtaggactctc C/T ccaagtcocctaatacccatc	196
ALDH5	2	5'flanking - 2575	gcagttcccgccgtagagag A/G ggtccggtcctcccgctgt	197
ALDH5	3	5'flanking - 2537	tggtgtggaactgtaaaaa C/T tgccgttattoaggaggata	198
ALDH5	4	5'flanking - 940	cttcaactaatctgggaaca C/T tacactctgtttaattttoa	199
ALDH5	5	5'flanking - 785	tgggaagctgaaagggat G/T ctgagacctgtgttggggg	200
ALDH5	6	exon1 + 183	ccgacgtcaaacctaacac T/C ggggaggtcatttggcacgt	201
ALDH5	7	exon1 + 257	cgtaagcagcccggaag C/T ctccgctcgggtccccat	202
ALDH5	8	exon1 + 320	gcggggcgggctgtgaacc G/T cctggcagacctagtggagc	203
ALDH5	9	exon1 + 605	acttggcccgccactgcgca C/T aggcacactgtgttatga	204
ALDH5	10	3'flanking + 1527	aaagtgcactgtgaagccc G/A tagagaaaaactctgtgttc	205
TGM1	1	Exon2 + 179	tggcaaatgcggcagatga C/T gactgggacctgaaccctc	206
TGM1	2	Intron9 - 611	acttaccactctgtctctc C/T tggcaggcctctctctgtca	207
TGM1	3	Intron9 - 272	ccgcacatctgtacccctgc C/G ccactctcagcagagcagc	208
TGM1	4	Intron10 + 54	tcagtcagtggttctctgtt C/T ccaacttcaccgtgactga	209
TGM1	5	Intron10 - 51	aggaggccgggagtcaggcc A/G cctcagaccctctggtca	210
TGM1	6	Intron12 - 47	aggagtcctctggggagcc T/G catgtagggaagcaggcctc	211
TGM1	7	Intron13 + 72	ggataaggacatcagggtg G/A gcgctaagccagcagcaggc	212
TGM1	8	Intron14 + 1671	atctcttaccacacccccca G/G catggtggggaggttctca	213
TGM1	9	Intron14 + 1691	ccatgtgtgggaggttctc G/A tcttaaggatccgcagagc	214
TGM1	10	Intron14 - 1634	tcctgcctcctctctctcag G/A gagctcagaacaccttcaa	215
TGM1	11	Intron14 - 1459	ggaaacccctcagaaccagg T/C tccaagccaaatgctttgcc	216
TGM1	12	Intron14 - 801	cagaatacaaaagtggatg G/C gaggcaaggagtcggcttag	217
TGM1	13	Exon15 + 233	ctcagggtggagcttagccc T/C gtgcccaggagcaatgggact	218
TGM1	14	Exon15 + 369	ggagtgcagcttctacttga C/A tgggggaacagatgctaata	219
GGT1	1	intron1 + 85	ttatccagtaaggtggcctc G/A tcaccttttctctgtggg	220
GGT1	2	exon3 + 68	gacggccaggtccggtgt G/T gtgggagctgctggggcac	221
NQO1	1	1 intron 1 80	aggaggtgtgagggcttgg C/A ctgaattttgttcttgaact	222
PIG3	1	5'flanking region -47	gggaaggaggaaaggaaaga G/A gggagggtgttctgtcta	223
PIG3	2	intron 2 243	taacaccggagcccgagcag A/G agtccagcttcttagaate	224
PIG3	3	3'flanking region 282	agcaggcccgagccctgccc G/A ctactcacctggccccaccc	225
NQO2	1	5'flanking region -434	tttctgttcaccacggacc C/G tcattctgtaaccgggatac	226
NQO2	2	5'flanking region -406	gtaaccgggataccagccag A/G gatggggagcggggggcca	227
NQO2	3	5'untranslated region -102	tcctcgagctcctactgggg A/G gtgcgtgttcggaaggta	228
NQO2	4	intron 1 1919	tcactcaaatagagctgagt T/C agtcaactcagctcttggacc	229
NQO2	5	intron 1 2004	acaaactcacatgccaccag C/G catatgatgtaaacatgta	230
NQO2	6	intron 1 3391	aaagcagagggctgtcagg C/T gccctgcctctaggctagg	231
NQO2	7	intron 1 3456	caaaagccctcactcagg G/A gccaactcttctgttttag	232
NQO2	8	intron 1 3595	actcccagctttaggttca T/C tcttgaagtgttctgtgtg	233
NQO2	9	intron 1 3596	ctgcccagctttaggttcat T/C ctgtgaagtgttctgtgtg	234
NQO2	10	intron 1 3598	gccagctttaggttcttca T/C tgaagtgttctgtgttca	235
NQO2	11	intron 1 3651	ccctgcgcttgaaggatg A/G atgtgacctctcccacatc	236
NQO2	12	intron 1 6036	tgtgtggcggttcaactgat C/T cccagccttctgctcgatc	237
NQO2	13	intron 2 14	atggcaggttaattgaact A/G ttgtgagtaagacttttt	238
NQO2	14	intron 2 192	gccagctggaagtgtataaa C/T tatctggaattatctgtt	239
NQO2	15	intron 2 635	caacctgttagcaactgac A/C caactccctggcctctgcca	240

遺伝子名	No.	存在位置	配列	配列番号
NQ02	16	intron 2 685	agtagcaccctccccacc G/A gctgtgacaaacaaatgt	241
NQ02	17	exon 3 139	ctgatttgatgccatgac T/C ttgagocggggocacagac	242
NQ02	18	intron 3 36	aatgctctatttataaaac T/C atctttatgtttttacttt	243
NQ02	19	intron 3 728	aacgtgggcataaacacca T/C ctagtgcacaaagcaggtg	244
NQ02	20	intron 4 1577	tgcctctgcacacccttcc C/T gacaccagccctttcttac	245
NQ02	21	intron 4 1832	tggccggccacgtggagcc C/T gctttcctcctcgacccac	246
NQ02	22	intron 4 2583	tggtttaogcaagotoot C/T gtccctcctcctgctgcca	247
NQ02	23	exon 5 330	ctgtactgttgacgtgcc A/G gccctcctgagggcctgat	248
NQ02	24	exon 5 405	atcccgaggttctacgattc C/T gtttgcctcaggtatgtc	249
NQ02	25	intron 5 21	gtatgtctcttggataagg A/T tcactatggatagttggagg	250
NQ02	26	intron 5 253	atggcaaacaggaggatggg T/C caggtgtcaggtgacgggg	251
NQ02	27	intron 6 2435	cccccttaaatcatttaac T/C gaattgtatgtaacaggtgt	252
SULT1A1	1	5'flanking region -1597	gcagagtaaaaggactcact C/G aagaaggagaaacgtgggggt	253
SULT1A1	2	5'flanking region -1491	gaggggtatatttcaaga G/T tccaggaagaggttaagatt	254
SULT1A1	3	5'flanking region -1376	cgatttcatatttactgat C/T atacaatgagatcctaggtg	255
SULT1A1	4	5'flanking region -1375	gatttcatatttactgac A/G tacaatgagatcctaggtg	256
SULT1A1	5	5'flanking region -1370	catattgtactgatcataca A/G tgagatcctaggtgaacct	257
SULT1A1	6	exon 1B -65	aacctgtcattccccacaca G/A caccacaaatcagccactgc	258
SULT1A1	7	intron 1B 442	gagccacccctgctaggcct G/A tgcctttgctgagtcacag	259
SULT1A1	8	exon 1A -197	gctgggggtcccagcaggaa A/G tggtagacaaaggcgctg	260
SULT1A1	9	exon 1A -159	ctgctgtgacaggagacagc A/C caggaaggctctagagcttc	261
SULT1A1	10	exon 1A -95	gagaccttcacacaccctga T/C atctgggcttgcgccagca	262
SULT1A1	11	intron 1A 60	ctggttttcagccccagccc C/T gccactgactgacttttga	263
SULT1A1	12	intron 1A 69	agccccagccccccactga C/G tggctttgtgagtgccggca	264
SULT1A1	13	intron 1A 174	tgtgtgtgtgaagggaac G/A gccctgctctgccccctga	265
SULT1A1	14	intron 6 11	catgaaggaggtgagaccac G/G tctgaagotttccctcatgt	266
SULT1A1	15	intron 6 17	gaggtgagaccactgtga A/T gcttccctccatgtgacac	267
SULT1A1	16	intron 6 35	gaagcttccctccatgtgac A/T cctgggggcccggcaootc	268
SULT1A1	17	intron 6 71	ctcacaggagccacacagg T/C caccagccccctcccttg	269
SULT1A1	18	intron 6 108	ttggcagccccacagcagg C/A ccgattccccatcctgct	270
SULT1A1	19	intron 6 111	gcagccccacagcagggccc G/A gattcccatcctgccttct	271
SULT1A1	20	intron 6 270	ctccctgcccaggggtgtc C/T acccaggccacagtcattg	272
SULT1A1	21	intron 6 488	ttttacttttctgaatcag C/T aatccgagcctccactgagg	273
SULT1A1	22	intron 6 509	aatccgagcctccactgagg A/G gccctctgctgctcagaacc	274
SULT1A1	23	exon 7 600	ccctctgctgctcagaacc C/G aaaaggagattcaaaagat	275
SULT1A1	24	exon 7 645	gagtttggggcactccct G/A ccagaggagaccgtggactt	276
SULT1A1	25	exon 8 902	gctgtgagaggggctcctgg G/A gtcactgcagaggaggtgtg	277
SULT1A2	1	5'flanking region -547	tgttcttttctgttatg G/C atccatgctgctccaccc	278
SULT1A2	2	5'flanking region -425	tgtgggtgactgggcoag G/A accctggcaccttcaagac	279
SULT1A2	3	5'flanking region -358	cttccaggcctccctato C/T cagtttctccttctgct	280
SULT1A2	4	5'flanking region -355	tcacggcctgctatccca G/T ctttctccttctgctggg	281
SULT1A2	5	5'untranslated region -28	actcaggcgaggaggccac A/G aggcagggttcccaagagct	282
SULT1A2	6	intron 1A 85	ctgactggccttgtgagtgc G/A ggcaagtactcagcctccc	283
SULT1A2	7	exon 2 24	gagctgatccaggacatctc T/G gccccggcactggagtacgt	284
SULT1A2	8	intron 2 34	gccaccacccctccacagg T/C ggcagtcaccaccttgcca	285
SULT1A2	9	intron 5 77	cagcaaccctgtgtggcac T/C cctggccgcttctccagtg	286
SULT1A2	10	intron 6 684	actgggtccacaggggtcga G/C gagctggctctatggtttt	287
SULT1A2	11	3'untranslated region 895	gctctgagctgtgagaggg T/C tcttggagtcactgcagagg	288
SULT1A2	12	3'flanking region 98	ctcccccgtccagotctc A/T acttgcctgtttggggagg	289
SULT1A2	13	3'flanking region 817	ccactgactggggcttgc A/C aggtgcacagggctggaaa	290
SULT1A2	14	3'flanking region 1008	cctctcccctgaggctgt T/C taccgctgtggggcccat	291
SULT1A2	15	3'flanking region 1464	tcccgtagccaggcaagt C/T ggtgaccagagagcagcccc	292
SULTX3	1	intron 1 332	cctgcttctcctttacctg G/T ctgctgtgtgaccttggac	293
SULTX3	2	intron 1 1167	taggaatgctaaagcgtgc G/A ttgcttctgtggcactca	294
SULTX3	3	intron 1 2872	cattctcaatgatgcagacg G/A aagcttctggcctggcgt	295
SULTX3	4	intron 1 6242	cacccttggcttttaccagc A/G tggaaacttttacctaat	296
SULTX3	5	intron 1 6601	gcgtgggcttctggggggg C/T gagaggagagtgaggccc	297
SULTX3	6	intron 1 6768	agcttgaatgagccagact C/T tcttgggacctgtgacccc	298
SULTX3	7	intron 1 6905	agtactttttttatctcc C/T catcctccaaactttgccat	299
SULTX3	8	intron 1 7464	gccaggatcccttgagagac G/A acatgaacacagccaggagc	300

遺伝子名	No.	存在位置	配列	配列番号
SULTX3	9	intron 1 7833	tgcttctgggctgggttggc G/A ggggcagctgtctccaggc	301
SULTX3	10	intron 1 8189	caaacctggggccttaaatgc C/T gcacaccagagcctcctt	302
SULTX3	11	intron 1 8316	ctctcacacaaggcgaggc C/G tcttcccttgaggcagagc	303
SULTX3	12	intron 1 8617	agacagaggctggggccaag C/T cagggttgcggagcttct	304
SULTX3	13	intron 1 8631	gccaagccagggttgcggga G/T cttctggaactgacaggcc	305
SULTX3	14	intron 1 9493	tttctctctagagcttccc G/A tctgtctctgtctcagagc	306
SULTX3	15	intron 1 10306	caggcggggcgctgaatgc C/T gcagtcgtgagggtggccag	307
SULTX3	16	intron 1 11987	tcataaaataatgatatcag T/C acactttttgaaatttgag	308
SULTX3	17	intron 1 13085	ctotgtgcccggttttnga C/A aggoaatgocctagagtcot	309
SULTX3	18	intron 1 13108	gccatgccctagagtcctgg G/A gattccacccagacagc	310
SULTX3	19	intron 2 700	gaaccatctgggagtggtc C/T gtaactgcccggcggggcc	311
SULTX3	20	intron 2 818	agccatagctgtagccagc G/A atcagcgctggaggaggagc	312
SULTX3	21	intron 2 1677	actccacttcccgaaccc C/T accccttcttctctctctg	313
SULTX3	22	intron 4 4954	gcgtgcgaaggcgggaggc C/T tgggatgctcaagacgtga	314
SULTX3	23	intron 5 3632	ccagctgactccacaccag C/T ggtcagagaacattgtttt	315
SULTX3	24	intron 5 3862	acattgtcttttaagggttc C/T gaagtgtcgaataaagaaa	316
SULTX3	25	intron 6 1874	tctgatctcagagagtgac A/G atggaagaatttataaaga	317
SULTX3	26	intron 6 2133	agaccggtgctcagttta T/G cccacagctcggcctccct	318
SULTX3	27	intron 6 2524	ggaaggccagggtgcctg T/C gatgccagagcagtgact	319
SULTX3	28	intron 6 2573	agctcatagctcgtctggg A/G tgtttattaacacotgcca	320
SULTX3	29	3'flanking region 12	gttccggcggttgctgag C/G gtttctgttggtgggtag	321
SULTX3	30	3'flanking region 445	tccaagcgtgttctctga T/G ttcctgtggaaggagatcc	322
TPST1	1	5'flanking region -298	accggccaccatgccagct A/C attttttgtatttttt	323
TPST1	2	intron 1 3520	agaaaagagattatgtta C/G agtgacgcttagacacaag	324
TPST1	3	intron 1 3610	ggcagaagaagaatatgca A/G ctattaacacacaataaatt	325
TPST1	4	intron 1 20828	tattgctgtccacctgtgca A/G tctgtctgtgataagtc	326
TPST1	5	intron 1 -6761	aatccaatatctattctga T/G aattotagaggggccagaga	327
TPST1	6	intron 1 -544	tagacaagtgaaatattta C/T gttcttagtggtttatggt	328
TPST1	7	intron 1 -526	tacgttcttagtggtttatg G/T ttggcagtttcccccaaca	329
TPST1	8	intron 1 -234	tcaagacatttaataatgca C/T atgttcacgttaacccttt	330
TPST1	9	intron 1 -48	ttatgtgggtttaagcatg A/G ttcttaaaaaatttaataa	331
TPST1	10	intron 2 -18944	aaaacattagaactgggaag G/A ttaaaaaatctttagcttt	332
TPST1	11	intron 2 -18687	tatgtgcacccttaataacat A/G ttcttaaaactagtacta	333
TPST1	12	intron 2 -18501	ttggaaggtaacttaagta A/G gtgcctgaabacacgggata	334
TPST1	13	intron 2 -159	gaatggggtttccctcagt C/G ctgccactggtgctcttg	335
TPST1	14	intron 2 -19	acctgttccttaaaactcac G/A cctgctttgttttccaggt	336
TPST1	15	intron 3 158	tgctggggaganaagatoag C/G gtotgggaactgttatttt	337
TPST1	16	intron 3 3779	agcagggcacgtccacctcc C/T ggcacacccatgtttcacc	338
TPST1	17	intron 4 292	ttgtatttttcatatgaac C/T atgaastatttcagctgaaa	339
TPST1	18	3'untranslated region 1518	gttctctgtacatgttctaa T/G gtttttagaacacgtgtgc	340
TPST1	19	3'flanking region 264	acggtgcttggcctgcatta G/T catttttagtggaatttct	341
TPST2	1	intron 2 578	tcacatcatctcactgc G/A aggatgccagataacctccc	342
TPST2	2	intron 2 789	cttaagccatcgtgcaggtc A/G ttgtgttcttctgtcactt	343
TPST2	3	intron 3 2009	cccaggctggagtgtagtg T/C gtgatctcggctcactgcaa	344
TPST2	4	intron 3 2017	ggagtgtagtgtagtgc C/T ggtcactgcacacctccgcc	345
TPST2	5	intron 3 2035	ctcggctcactgcacacctcc G/A cctccgggttcaagcagtt	346
TPST2	6	intron 4 104	aatgttcagctctcaattc C/T tggcatctgattgttct	347
TPST2	7	intron 4 379	taataaataaactattgt C/T ctttcttctgtattataaggt	348
TPST2	8	intron 4 588	tactgcagcctgatacttct C/T ggttaagccatcctctcac	349
TPST2	9	intron 4 828	cacccaggtcctcagtag C/T taggaactgcaggtgcacgcc	350
TPST2	10	intron 4 718	cccaggctggtctagaactc C/G tggcgttaaggatgocccot	351
TPST2	11	intron 4 873	gttgatggccttattatac G/A ttccattacagcttctagt	352
TPST2	12	intron 4 949	caaatatttgaaatgggac C/G caggcctgaggaagacttt	353
TPST2	13	intron 4 1033	taagctcagcatttctgagc G/A tctgtctgattttaggaaata	354
TPST2	14	intron 4 1051	gcgtgtctgattttaggaa A/G taaacagttatcgtattgaa	355
TPST2	15	intron 4 1356	gattcaacgtacataccagc C/T gacattgacaggtgaatggc	356
TPST2	16	intron 4 1707	gtctcttaaaagggtgcto G/T ctgccccgtgcttgcaccag	357
TPST2	17	intron 5 215	aagaccagcctgacccaaaac G/A gtgaaccccgctctacta	358
TPST2	18	intron 5 341	tggaggcagaggtgcaggt G/A agctgagatcacgccgttgc	359
TPST2	19	intron 6 31	ggacttcaactgggggtccc G/A ctgcttctgggtggcccccgg	360

遺伝子名	No.	存在位置	配列	配列番号
TPST2	20	intron 6 273	gtttgtctgacactggggac A/G gggcaggaagcaccactatg	361
TPST2	21	intron 6 693	aaaggagattttttgaactt G/C gtaattcaagatttaagat	362
TPST2	22	intron 6 1635	tcttggtacagagattggcc T/G tgaacaaacatgagtccttc	363
TPST2	23	3'untranslated region 1147	cttcccactttcagatctc C/T gcaaatgacttcattgcca	364
SULT1A3	1	exon 8 843	cgcttcgatgcggactatgc G/A gagaagatggcaggctgcag	365
CST	1	intron 1b 6302	agagctccccagagaggact A/G tgaggctgcagatgcata	366
CST	2	intron 2a 1004	gagtgagacccccatctcta C/T aaattttttttaaagta	367
CST	3	intron 2a 1395	atgcctaagtttacagtagc T/C aggcaggaagggcacaacca	368
CST	4	intron 1d 473	ccagagcctgaggttggtgc T/A ggggccctccatggctgcc	369
CST	5	intron 2b 726	ctatctctcagtgccctctc T/C gtccctgtctggacccgtct	370
CST	6	intron 2b 745	ctgtccctgtctggacccgtc C/A tggggggccacagagcaggc	371
CST	7	exon 3 85	tcactagtttctgtgtgtg G/A tgtactcctatgcctgtccc	372
CST	8	intron 3 308	tcgtctgagtgaggagttc G/A agaccagcctggccaacatg	373
CST	9	intron 3 853	ttttgtctataaaatggca G/A ttctatgtggcccaagctga	374
CST	10	exon 4 198	gagcgagtgatccgggcca C/T ggctggcgaggagtgcca	375
SULT1C1	1	intron 3 2280	gcaatttttggtatttta G/T tacagtcagggttttaccat	376
SULT1C1	2	intron 3 3742	gcagatctcactttctgca G/A attccctgaatttgcctccc	377
SULT1C1	3	intron 3 4453	ttcatagggtttttccctca C/T ttgttttgaattttgtata	378
SULT1C1	4	intron 3 5234	gaaaagagacatagaggcagg A/G gagctttgcagttctctaa	379
SULT1C1	5	intron 3 6175	tgggtggaaggaaggtgagg G/C agtctctctctctctgtcc	380
SULT1C1	6	intron 4 205	acatgaagcaggatccaga T/C tgaatgtttggagggaacta	381
SULT1C1	7	intron 4 408	ggctoaogcctgtaatocca G/C cactttggaggccagggcg	382
SULT1C1	8	intron 4 429	caotttggaggccagggcg G/C gtggatccaaagtccaggag	383
SULT1C2	1	5'flanking region -110	tctgttaactcaagagaa C/T ggaagggtggaaacgggaco	384
SULT1C2	2	exon 1 15	acactaatggccttacaca G/C atggagggttttaccattga	385
SULT1C2	3	intron 1 297	gtagactgtttattttctc A/C ttccaatctaggcccttat	386
SULT1C2	4	intron 1 363	gagtggtgagctagaaagg T/G gttcctgagctgatttggg	387
SULT1C2	5	intron 1 2300	gggtactatcagcagccac C/T acctcaggaaggtgacttc	388
SULT1C2	6	intron 2 455	aagcttggagcaaataga T/G aaaaaaaatctgagaat	389
SULT1C2	7	intron 4 55	caaatctccaaacacccta G/A aaggaaagatctttcttt	390
SULT1C2	8	intron 4 111	ctgcctcttttaaggaa C/T tctcactctcttcaggat	391
SULT1C2	9	intron 5 1657	ctttgtttactttgtttt T/C acttggtacaaagtgtgt	392
SULT1C2	10	intron 5 2082	tctgctcctagagatggagg C/A gtcccacagccacagtatg	393
SULT1C2	11	intron 6 933	agctactgaacctctccac A/G taactgtatttcaggggcag	394
ST1B2	1	intron 1 80	actgtccataaaatcatta G/T caattctaaataaagttaata	395
ST1B2	2	intron 2 -352	aaactttaaatagtcattta T/G agcaatgcacaggtataata	396
ST1B2	3	intron 2 -85	attacataatgctcaaaat G/A tcttgaaaaactggttgca	397
ST1B2	4	intron 4 460	gtacttgacattaaaaata T/C ctgatgtttatatatccata	398
ST1B2	5	intron 4 470	ttaaaaatatctgatgtt A/G tatatccataaatagctaat	399
ST1B2	6	intron 4 518	tttaagattgtctctatait C/G ttacttcttggttactaa	400
ST1B2	7	intron 4 616	aatgtttatgaaaatagact T/C ttatctggttttagtgccct	401
ST1B2	8	intron 5 58	ctgcacatctgtctaaaagg G/A ttgatatttctttccaact	402
ST1B2	9	exon 6 612	taatagaatccaaagaggga A/C atcaagaagatcattagatt	403
ST1B2	10	intron 6 582	aataaattacttccatttaa G/A tagtctgtttattgtggctt	404
ST1B2	11	intron 6 3130	agatgtaaaaattattcaa A/T tttaaaagcctgaaatatt	405
ST1B2	12	3'untranslated region 907	tttaaggtgtctaatccaa C/A atctgaagaatgaagagatt	406
ST1B2	13	3'flanking region 50	tcagatccagttttgtcc T/G ttgattctgagtttccaat	407
ST1B2	14	3'flanking region 328	tttgaccaggacactgtgt T/G ccactgtgtctaccagatt	408
ST1B2	15	3'flanking region 446	gtagttcagattttggaat G/A tttttctatatcatccta	409
CHST2	1	5'flanking region -260	agccggagacgtccggggc G/A gtgatccggagccgctccc	410
CHST2	2	5'flanking region -56	gcgctgggaccagccggcg C/T gccgcctcggagtcgggc	411
CHST2	3	3'flanking region 218	aggagtgaacacatcttg T/A attctaaaggcagaaccaa	412
CHST2	4	3'flanking region 383	gcagagaccatgttttgt G/C ctgaggtgttgaagaaaa	413
CHST2	5	3'flanking region 952	tactgaacattctgcagaa T/C gttatctatgagaagaat	414
SULT2A1	1	intron 2 478	ggactgggtctgtacacac T/C tegtottactgtgttaaat	415
SULT2A1	2	intron 3 382	caaaacctcttaattct G/A ttctatctgtctcagaact	416
SULT2A1	3	intron 3 409	tcgtctcagaactgattgc A/G tgactctaggatcgtatat	417
SULT2A1	4	intron 5 249	agctggaaattacaggcaca C/T gccaccaccccagctaat	418
SULT2A1	5	intron 5 395	aggcatgagccacggcgccc G/A gccaatttatcagcttaat	419
SULT2A1	6	3'flanking region 33	ttcctgttaaaagtacaa G/C gattggccagggcacggtgt	420

遺伝子名	No.	存在位置	配列	配列番号
SULT2A1	7	3'flanking region 46	gttaccagggttgccaggc A/G cgggtgttcacgtcgtgaat	421
SULT2A1	8	3'flanking region 199	ttagocaggcgcattggctc A/G tgtctgtaatccacgactt	422
SULT2B1	1	intron 2 4162	ttctccctctcctcaccat C/T cgcacacaggtgatctacat	423
SULT2B1	2	intron 3 879	gagggaatccagctctgggg G/A ctggacctgggggttgg	424
SULT2B1	3	intron 4 3882	ttccacgcctcctcctggc C/T gagtgcctcctcctcgtga	425
SULT2B1	4	intron 5 1780	cctgcagaagggtgcctt C/T catgtccaagcagtaattggc	426
SULT2B1	5	intron 5 1814	taattggtcagcattgggc G/A ttgtggggcattgagacag	427
SULT2B1	6	exon 6 789	cccttttcccaagggtctg C/T ggcgactggaagaaccactt	428
CHST4	1	5'flanking region -1092	atgaagcctgttgccatctc G/A ctgtgtcgtgccagcactg	429
CHST4	2	5'flanking region -941	ctgccagagagaacaggaa G/A ggaggagagccacacaatt	430
CHST4	3	intron 1 -150	caggaaatgattggagaag G/T actggtgccattgttggcac	431
CHST5	1	intron 1 -144	ggcctcttaggtttcagcca A/C gacaggtgactcttagcacc	432
CHST5	2	intron 2 17	caacgttaagagcgtcttca T/A tgtccagctcctttgttct	433
CHST5	3	intron 2 139	aatccagcactttggagg C/A ggagatgtcggatggatca	434
CHST5	4	intron 3 1829	gactgtatgtotgtattoa T/C ataggaaacaaataattcatg	435
CHST5	5	intron 3 2037	aaatgaacaaacacacaa C/G tgcagagaagcaacaaag	436
CHST5	6	intron 3 2134	aagcagctaattgtgtcc G/A tacaggtgaattaggcagg	437
CHST5	7	intron 3 2528	atggttaaggtgcctgggt G/A cagtatgtcagcatcctct	438
CHST5	8	intron 3 2674	gcacttatcctagaaggcc A/G ttctgaagactcagcagga	439
CHST5	9	intron 3 7039	ctagctcccgccggccacc C/T gggaccgcagccacgtctga	440
CHST5	10	intron 3 7211	gtagcccccaggacaccccca T/G cctcaacatcccattctggg	441
CHST5	11	intron 3 7294	ggagcttcaggtggttgg T/C accccgactcttctgcat	442
CHST5	12	intron 4 108	gcagggctctgcaactctga G/A gggcgaatcacaggtggag	443
CHST5	13	intron 4 402	agcacttgaaaaagtagct T/C gcactttagcggagggtggg	444
CHST5	14	intron 4 547	ctcctgtccccgattgagg C/G gaaggagcagaggtgagatc	445
CHST5	15	intron 4 1142	gccccaggtctatagctcc C/G cattggcagtgctggattt	446
CHST5	16	intron 5 1187	caotgggcagtaattggggc A/G tggatgggcagtgaggccc	447
HNK-1st	1	intron 1 139	gtgttttggcgaattgaga C/T ctccctgattgogggagta	448
HNK-1st	2	intron 1 1020	acotgagcagaaaaattctt T/C ottoctgaaatgaaaattg	449
HNK-1st	3	intron 1 1091	aagaattgtaaacatcaca G/A gcaacttgcaattatctcg	450
HNK-1st	4	intron 1 1971	ctataactatttcaaacata C/T gaaacaggcataattggatt	451
HNK-1st	5	intron 1 2096	atttagaatattcatttacc A/C agaaatccaaatataacctg	452
HNK-1st	6	5'untranslated region -91	ctatccagtgacaaggaggaa C/A caagaacctcagttcagggg	453
HNK-1st	7	intron 2 -530	agtggcgaggcgaggagc G/A tcagtttctatctcttggct	454
HNK-1st	8	intron 2 -466	gctacatctgttcagccagt C/T agaatttaaacacagccag	455
HNK-1st	9	intron 2 -92	acggaaatatttgtgctgat A/T ctactgaactgaatcacct	456
HNK-1st	10	intron 3 152	catggctcctgcttctcat G/A ttacagaggtgtgaggggag	457
HNK-1st	11	intron 3 312	cacagttggccttatgcctt G/C agcaggcgccctctcaggt	458
HNK-1st	12	intron 3 1948	tcctttgtatgtacaaagtt T/C gtgctgaattgtttcagtg	459
HNK-1st	13	intron 3 2140	ttacaootggagaggagcac C/T gcagcgtccttaatactgo	460
HNK-1st	14	exon 4 187	agaagcacattcctgaggaa C/T tgaaggtgggcacagccagg	461
HNK-1st	15	intron 4 581	cctgatcattccctagctgg G/A atgagggtgcactctgga	462
HNK-1st	16	intron 4 615	tctggaaaggcctctcacttc G/C taacccccattctggatcta	463
HNK-1st	17	intron 5 7	gattgttctaattgggtgt G/A tgggtctactgaatgtccac	464
HNK-1st	18	intron 5 123	acctgaaggagcactgtggc G/T tccagacaggcctgttttg	465
HNK-1st	19	intron 5 721	ataattatgggtctgctta T/C gaaatttagcttcagacagg	466
HNK-1st	20	intron 5 867	tgtgcccacagagtcgggt G/A tcaactcctggccactgttg	467
HNK-1st	21	exon 6 444	ccaggagcaatttcttccat T/C gaggagatccccgaaaact	468
HNK-1st	22	intron 6 94	otgagttotgtacttggag A/G ttgatoggaggacacagag	469
HNK-1st	23	intron 6 247	catgaaggtgacatcattt G/A ttaatagaaattagcaggca	470
HNK-1st	24	exon 7 696	aggaggacccgacagagac C/G cggggatccagtttgaaga	471
HNK-1st	25	exon 7 870	gagaccttgaggagcatgc C/T ccatacatcttaaaagggc	472
HNK-1st	26	3'untranslated region 1110	tcaaatatctttattagacc T/C ggggctaaccaggtgaagat	473
HNK-1st	27	3'untranslated region 1178	ccacaccctcctttgagga C/T gccggggtctccacaggc	474
HNK-1st	28	3'untranslated region 1393	ggagcatcacacagctta G/A gagccgtttccttcaggtgt	475
HNK-1st	29	3'untranslated region 1452	tgaagttctctgtcgtatgc A/G ggggtgcttcaacctcaot	476
HNK-1st	30	3'untranslated region 1540	gcaaggggctctgtgaatc G/C cagagacttttcagacatca	477
HNK-1st	31	3'untranslated region 1696	gggtgtgtgtgtgtccagg G/A tccatctttccagaatccat	478
HNK-1st	32	3'untranslated region 1829	agggagggtttttctacct G/A agaaggagggtgtctttgag	479
HNK-1st	33	3'untranslated region 2211	tccagcagtgccggttctctg G/T caacaaggtaggccctggtg	480

遺伝子名	No.	存在位置	配列	配列番号
HNK-1st	34	3'untranslated region 2212	ccagcagtcgcttctctg C/T aacaaggtaggcctctg	481
HNK-1st	35	3'flanking region 1016	cacacgaagggtgactca C/T ggctgcaggcccccaggt	482
HNK-1st	36	3'flanking region 1152	gcctgcttctctatctgga A/C tctocagaagcagggaacag	483
HNK-1st	37	3'flanking region 1291	gccgagaccctcagcggat A/G gtgcgttccagggctgagc	484
STE	1	5'flanking region -605	caggtttctaaataataat C/T gaaaggtagtgatgtttac	485
STE	2	5'flanking region -536	taaaattttcaggtctgctt A/G agagttaaggcaaggagtt	486
STE	3	5'flanking region -231	ccttcttcccaaacccctga C/T ggcagacttgggaattgaa	487
STE	4	5'untranslated region -64	tgcagcttaagatctgcctt G/A gtatttgaagagatataaac	488
STE	5	intron 1 69	aaatatagaatgaattat G/A tattaccaagctcttaaaaa	489
STE	6	intron 1 311	caatgagaaaataaagcaag C/G agggtagaaggaggtagaat	490
STE	7	intron 1 655	tctaagaaaagtagggactat G/A agaaccctatgtatctata	491
STE	8	intron 1 671	ctatgagaacccctatgtat C/T tatatocacatagattct	492
STE	9	intron 1 772	aaaaggcaggttgaagatg C/A aggggggagtagcagaaa	493
STE	10	intron 1 1715	taacatttctgtaacott A/G tcaattttagccaagtcat	494
STE	11	intron 1 1928	aaatgataaatatcaggaa A/G tcaaaaatctctgacttaga	495
STE	12	intron 1 1953	aaatctctgacttagatacc C/T ggcaataataatcaaatgta	496
STE	13	intron 1 2087	aattttgaaagaaattgaag T/G tctgtgtttttttttatca	497
STE	14	intron 1 2323	taggtatgtaggagggtccc G/C ttatatacatagttgtaat	498
STE	15	intron 2 165	tctattccatgaccacaatt T/G ttacctgttaactgaatagt	499
STE	16	intron 2 1707	cctaggaccacaacatgagac A/G taatataccatcagtaaaat	500
STE	17	intron 3 850	gggtgccattccctcaagaa T/G ttatacttttgtttacacac	501
STE	18	intron 4 1853	agtaacaggctagtagataa T/C ataaataactgaggccaacg	502
STE	19	intron 4 1899	tacatgaacttagagaatca A/G gtatgacacacacaccaeca	503
STE	20	intron 4 1930	cacaccaacaataaaattac A/G cagaatgataaagaatttg	504
STE	21	intron 5 666	ttctgcatcatgtagtaaaa C/C tataaagaaaataataatgt	505
STE	22	intron 5 982	aggcaaaagcagaacctttg A/C ctacacacaacattatatt	506
STE	23	intron 7 369	agattttattctctctctt T/C ttgagttgaagaaataagt	507
STE	24	intron 7 447	cacctttcaagggtgaagtgg C/A aaaaaatagaattcaata	508
STE	25	intron 7 672	aatottgctctttgaacct A/T ctgtcagtgagagtcaggga	509
STE	26	intron 7 856	tgttacagaggacttaaac A/G gttgtcttgccttcaaacgg	510
STE	27	3'flanking region 218	cagcctcccaagtagctagg A/G ctacagacatgtgcaacct	511
ADH1	1	5'flanking region -55	atcatgtgtgaactggaat C/T ggggtgtattcaagcaaaaa	512
ADH1	2	intron 1 268	acatttgcggtaaaagcgata A/G ttatttccaagctaatcatg	513
ADH1	3	intron 3 442	aatgagagctacatggcta C/A ggctgaatgagcatgacctt	514
ADH1	4	intron 6 56	tacaacttgaggatgacatt T/G aggcctgcagaatatatgttt	515
ADH1	5	intron 8 74	gtctatgcagaataaag G/A tgggaagatgggaataatta	516
ADH2	1	intron 2 340	ctatttttaaaagcgtgcot T/C cttacataagaacttaaat	517
ADH2	2	intron 3 91	aaggcaatgagagacgaag T/G gottgcacaaggtcaccgag	518
ADH2	3	intron 3 205	atgtattgtaccttcaacc A/G ttatgtaccgagatctact	519
ADH2	4	intron 7 108	acaattgacaaggcaagatt T/C tgaacacaaatcaaaaataa	520
ADH3	1	5'flanking region -254	tgagagaagagaagcaggaa C/G ttgagagaggaggaagagag	521
ADH3	2	intron 2 355	tatgcattctctatattat A/G caagacaaaaatttaggat	522
ADH3	3	intron 3 32	acaactcagggaaacatgcctt G/A gttcaccatcacaagattag	523
ADH3	4	intron 4 8	ctgcttgaaaaatgagtaag C/T ttctgagcttcttctgcac	524
ADH3	5	exon 5 453	agcaccttctccagtcacac A/G gtgtgtgagtagaatgcagt	525
ADH3	6	exon 6 815	ttcgtttgaagtcacgtgc A/G gcttgacaccatggtatgat	526
ADH6	1	intron 3 249	tgaacttgacttgaaagta C/A aatgagacaaaaatttatg	527
ADH6	2	intron 6 1072	taacccctatactgtattgc A/G tcaatttctaaccagcagct	528
ADH6	3	exon 7 885	gtctgtgtgtgtgtgggt G/A ttgcctgcaggtgttcaact	529
ADH6	4	intron 7 1292	gttgagaaacactgcctagt C/A cgtctgtgtgtctagaatt	530
ADH6	5	intron 7 1616	ctatcacagaataatccgca T/C agaacactaagcagattcag	531
ADH7	1	5'flanking region -528	tgtgcagacacagaagttt T/C acttaactttotacacctaa	532
ADH7	2	intron 1 361	tcagtagcatgtgtgaact C/T gctgaagtggtcaatggga	533
ADH7	3	intron 3 183	aacctcaacotttagaaggc A/G aacctacggtgtttataaa	534
ADH7	4	intron 4 76	tgaattgaatttaattatc G/A tgtatttgatgtataaaaca	535
ADH7	5	intron 6 615	tggcctatgcgtaaagagact T/A ggaataatggaataaagcca	536
ADH7	6	intron 8 532	aagtctaacctatctaccaa T/C ttatgtgccattgtaatat	537
ADH7	7	intron 8 651	gotgctattttttcaagta G/A gccacaaaatttcttattt	538
ADH7	8	intron 8 760	catttttgatgaagaccaa T/G gttgtgaaggaataaata	539
ADH7	9	intron 8 1207	tctccacatttggtotagcc T/C acaggtcatcatattatga	540



遺伝子名	No.	存在位置	配列	配列番号
ADH7	10	intron 8 1691	tcctcatctcattgccac G/A ctctattgcttaattcagtc	541
ADH7	11	3'untranslated region 1364	atttacattttgaaggcta T/C aattgtatctttaagaaa	542
ADH7	12	3'untranslated region 1498	gatataagtaaatgcattcc T/C agaglaattatcacttaaca	543
ADH7	13	3'untranslated region 1584	aaacactgttatgagttaa C/G ttgattacattttgaaatc	544
ADH7	14	3'untranslated region 1818	aataataacatagagctaga A/G tcatattatcactatca	545
ADH7	15	3'flanking region 865	tacatcaaaagaataaatac C/T aagaaggaataaacacattt	546
HEP27	1	5'flanking region -191	tcagcactctgtgtctagct A/T aaggtttgtaaatgcaccaa	547
HEP27	2	5'untranslated region -163	gaaccatcaattccgtaca C/A attttgtgactttgaagag	548
HEP27	3	intron 1 1941	aaatttacctaaccagcct G/C actctctgccactttctgtt	549
HEP27	4	exon 3 289	ttgtgtgccacgtggggaag G/A ctggagaccggagcagctg	550
HEP27	5	intron 4 1070	tgctcagttcaacaggatca T/C gactctttttctcgaaactg	551
HEP27	6	3'flanking region 362	ggctttgtgtgtgtccatt A/G tctgaactgggctgtctggg	552
LICAM	1	intron 1 + 767	ttgacttccattacatgggt G/A aotgtgtgagtcactotgtt	553
LICAM	2	intron 1 + 862	gcattgggtcatgtgtatgt G/C tgagtgggctgaatgtaag	554
LICAM	3	intron 1 + 1332	caggatgaagagcagagc C/T gctggagggccacacaggtg	555
LICAM	4	intron 4 + 502	tttccctgggttttccctt T/C gcattccatctccctgagc	556
LICAM	5	intron 18 + 147	agcgagcttataaattccc C/A acacttcacatttctataat	557
LICAM	6	intron 24 + 221	ctccttagccccccagaggg C/T cccaactttaagagcactact	558
AANAT	1	5'flanking -542	aggggtgcaggatgggtgt G/T agctggagggcaggggtag	559
AANAT	2	5'flanking -263	ccccccacataaagaggtggg C/G ttgtccaagactccgagggga	560
AANAT	3	intron 3 39	cgccacgtctccagggagggc T/A ctgaagacagaggtcagcca	561
AANAT	4	exon 4 150	cagccggccgtgcgcgggc C/T gcgctcatgtgcgaggacgc	562
ARD1	1	intron 1 + 317	ccgtcgtgtctgtcggccc C/G ctccctcggggctgggcagg	563
ARD1	2	intron 6 + 322	gctcctcagcatctgtctac G/A ccagggaaccacacctctct	564
ARD1	3	intron 6 + 1095	aaggctccatctcgagacaa A/C aagtcaggtgtgaccigccc	565
ARD1	4	intron 6 + 1179	aggaggaagacctgtatccc A/G gggacacccctctccactcc	566
ARD1	5	intron 7 + 159	ccctcaggtctctagggcaga C/T ggctcctctaaagcccagc	567
ARD1	6	intron 7 + 295	tgaccagccctgccaccga G/T gagccttgggcagaaaccctg	568
ARD1	7	intron 7 + 416	actaccatggagggcccccac G/A acagagcgtgtcccttgac	569
NAT1	1	3'UTR 215	aataataataataataaa A/T aatgtattttaaagatggc	570
NAT2	1	exon 2 867	cgtgccaaaacctgtgatg G/A atcccttactatttagaata	571
NAT2	2	3'flank 521	ccatccatacttgccacaa G/A agaaggaacatgagotttat	572
NAT2	3	3'flank 573	gatttgaatccctgtggaca C/T ggggtgaattacttttaaaa	573
NAT2	4	3'flank 918	attttctgtttgaattccc A/G gtatcagggtatagttaa	574
NAT2	5	3'flank 979	actattctccctctctgact C/T gtgatgactataataatctt	575
NAT2	6	3'flank 1958	tacctattgaagtaagccta C/T gtcataccacactatttgtt	576
NAT2	7	3'flank 2034	ccactgattcccagagctag T/G tcatataagaagacagtgcct	577
NAT2	8	3'flank 2201	cagattactggagggctact G/A ttgtctcccaatgcaaatg	578
NAT2	9	3'flank 2818	gggatattctctctcttct C/G cccagtcagatgttgaacc	579
NAT2	10	3'flank 3237	atatatttccaatataaaa A/Δ caaataaatttcgaaact	580
NAT2	11	3'flank 3386	caacaaagagatttttaaa G/A ctttttaaaacacacagag	581
NAT2	12	3'flank 3660	cagcactattcgcaatagca A/G agatgtgggaatcaatctaaa	582
NAT2	13	3'flank 3973	agcagaaaaataaataatg C/T gtactaggcttactacctgc	583
NAT2	14	3'flank 4029	caaaacaaacccccatgaca T/C gagtttatctatatacaaaa	584
NAT2	15	3'flank 4118	ataagattaatatctgcata C/A aaatctttgtttacagcttg	585
NAT2	16	3'flank 4146	tgtttacagctgttatata C/T tgaattatgtctgtccccc	586
NAT2	17	3'flank 4279	ttaactctgattgattggg G/C ctttataagaaaaagaaaag	587
NAT2	18	3'flank 4323	ttgtctctccccagtcag T/G taccaggaagggccatgtg	588
NAT2	19	3'flank 4446	tcaattggctttatctgcga T/C tctggaatcaggcaatactc	589
NAT2	20	3'flank 4462	gcgattctggaatcaggcaa T/C actccatttcataaaacaga	590
GZMA	1	5'-flanking -462	octcagcttgcaactggoot A/G ctaattcttatataatccaa	591
GZMA	2	5'-flanking -172	agcctgcctcgtgcagtg G/C ccattcatccaccattctcac	592
GZMA	3	intron 1 1949	gacataaggttctctatc A/T gcatgtatgtttgcttctgt	593
GZMA	4	intron 2 + 683	gactgcgtgacaggtggaa C/T tagcctcagcatggaagggt	594
GZMA	5	intron 2 + 1250	gttggtgtgttttactag G/A ttatgaatgatagccttaat	595
GZMA	6	exon 4 + 105	tgccaaagttgcaggtgggg C/G aggaactcacaatagtcatc	596
GZMA	7	intron 4 + 696	atagagccttacctaagaa A/G ggtgtgcagtatgcattgtt	597
GZMA	8	intron 4 + 1141	ctgttcagggaggatccogg G/A ttccaacatggtttttatt	598
GZMB	1	5'flanking + 529	gcctccgtctcacaccaaca A/G gcagatttccccaccagggc	599
GZMB	2	intron 3 + 141	gaggaagattgtgcagccc C/T atcactgtgtcggggccag	600

遺伝子名	No.	存在位置	配列	配列番号
GZMB	3	3'flanking + 448	ttttcagggcctgtccctcc G/A atggggcaggcttctccca	601
ESD	1	5'-flanking -333	gtctgggacagagggttg G/A gggagttgaaattaggccct	602
ESD	2	intron 1 603	gtcattttgatggggctat C/T agggaaatgggattgagggc	603
ESD	3	intron 1 717	tggtgtagaagcagcatt C/T taagcactacgtgaattaac	604
ESD	4	intron 1 1864	gctttcatgcaggattgac G/C tagtgggagtgattaggaag	605
ESD	5	intron 1 2389	ttttgggaacacctgtctag G/A tgtaagagccagtggaata	606
ESD	6	intron 2 21	taaacctgtttttgttta T/C atgttactotgaacattgaa	607
ESD	7	intron 2 588	taaaattagtatctctct G/A taagttcattatttaagata	608
ESD	8	intron 2 1498	tagaaaaatgtgtatcacac C/T gtaagtttcagtaattgta	609
ESD	9	intron 3 92	ctttatctagatattatagt C/A cctcattttacttttaact	610
ESD	10	intron 3 422	gtaaagagattaaacacaca C/T gcacacatacatatacctat	611
ESD	11	intron 3 581	agaaaaacctgagaatgaca C/T aatttatttaagccatagt	612
ESD	12	intron 3 2270	gccagtaattacatgtagcc G/A ttatcatcaaattagcta	613
ESD	13	intron 3 2951	taatgaaagtaaatgttca A/G ctcccttaacaaaagttgaa	614
ESD	14	intron 3 3001	aaatgtcagaattttttgt G/A cgtcagtcacacaagaa	615
ESD	15	intron 3 3096	eaaggcctacagaaaaactt G/C ccagtgaggcctttgttg	616
ESD	16	intron 4 2611	tctaatagtcccagttat A/G tgggtcacatcttcatgtcc	617
ESD	17	intron 5 390	tctttttcatctctgttaa C/T atcaaccatacagttaaaca	618
ESD	18	intron 7 107	ttagtattggaactaaact T/C tctagtgttgagaactttgg	619
ESD	19	intron 8 1090	aaattctaaactaaagg G/T tctactctttagtaactaga	620
ESD	20	intron 8 1651	tataaagttgtgttaata A/G tatatatgaataagaatt	621
ESD	21	intron 8 2047	agaaggaaaaagccatttt G/C ttaagaatccctgagatag	622
ESD	22	intron 9 -3490	etagaaggagaggctatact A/G cctccttaagttctcaggacc	623
ESD	23	intron 9 -2596	actaaggataaaatattggc A/G tactcagtcacattggaact	624
ESD	24	intron 9 -666	aggccttaatgacatatttc T/C cctcacataaagatacaaca	625
ESD	25	intron 9 -660	taatgacatattcccctca A/C ataaagatacaacatgcttt	626
ESD	26	intron 10 799	tatgttaactgaagaaaatg A/G cattaagttcctaagttat	627
DDOST	1	intron2 629	attctgttaagaatttctta T/C attaagaatattgtctct	628
DDOST	2	intron2 3125	gagaatataggagcttctgc G/A tatgcctgaaagtcagtcag	629
DDOST	3	intron2 3920	attactcatttaattgaataa A/G tggattactgagcactgtct	630
DDOST	4	intron3 189	actgctgtccagggtccat C/T tggggctgagcccagctgga	631
DDOST	5	intron6 185	ctgtcctctgttcggagg C/T gtggcagcttttcccttact	632
DDOST	6	exon8 37	aaactatgaactagctgtgc C/T ctctcccgtgggtgtcaa	633
DDOST	7	intron9 37	tcctgcccaagaatgtctcc A/Δ aaaaacggccccaggcctca	634
MGST1	1	5'flanking - 5	tctggacctgacagagg G/C gacatcgtgcaaaagcaaat	635
MGST1	2	intron1A+330	ctcagcaggcagtgattact C/G tggcgggttaactcagtgta	636
MGST1	3	intron1C+1428	gtaaagggaaggcgttcc T/A caactgagaagtgagattc	637
MGST1	4	repeat	attattgtctacactcagg G/A ttttcgggtcaagcgagat	638
MGST1	5	intron1C+2914	ctcatcaggtgtgtgcaga G/T gggctgtgtgtgcccagct	639
MGST1	6	intron1C + 4274	attgtaatatagattaaacag G/T tgatgaagtagtgatcata	640
MGST1	7	intron1C+4276	tgtaatatagttaaacaaagt T/G atgaagtagtgatcataat	641
MGST1	8	intron1C+4306	gtgtacataatgtacatagt A/G tagttgaacacatagcaagc	642
MGST1	9	intron1C+4406	gatggctatagaccaataa T/A gatcacataaatgtataga	643
MGST1	10	intron1C+4464	agaagagattgcagctgatag A/G tgtcaggcttaataaggacac	644
MGST1	11	intron1C+4683	aatggcagaggactggaaat G/T tacattttaagctttaccct	645
MGST1	12	intron1C+4767	gccttctcttcagcacatt C/T ccaattatacttcaattcc	646
MGST1	13	repeat	atttcaatttttttttgg G/A ggggagacagagctcact	647
MGST1	14	repeat	aattacctcccaaggcctc A/T tatcccagatactatcacat	648
MGST1	15	intron2+2379	ttctcaaatctattatata C/G tattcttcaaccacaaagttt	649
MGST1	16	intron2+2767	tttaactatagatgccttct T/G ctctcttgtgtttgattta	650
MGST1	17	repeat	taactgcagctcacaacctot C/T gggctcaggtgatactocaa	651
MGST1	18	repeat	aaaaaaattgtagatagg T/G tactccctatgttcccagg	652
MGST1	19	repeat	ctccctatgttcccaggct A/G atcttgaattotttggctca	653
MGST1	20	intron3+1495	gtcagacaatggccttcagc G/A tctctctttgcagaatag	654
MGST1	21	intron3+2528	ttttggagacaattttoaga G/C agagcgtttocagatcttc	655
MGST1	22	intron3+2567	tcctcttccatttttaagtt A/Δ gacttttttttccactct	656
MGST1	23	intron3+2731	atacacatatggaacaatta A/C ctaaaaacttaaggtaatat	657
MGST1	24	intron3+3288	gggtttatagtgtccccc C/Δ tccccgccccaaaagacc	658
MGST1	25	intron3+4288	coattctatttgcactgc G/A taacacagcgtggaagtgc	659
MGST1	26	intron3+4378	aaatgtctgtccttttgca T/C gttgtgaaggagaacactaa	660



遺伝子名	No.	存在位置	配列	配列番号
MGST1	27	intron3+4429	attggaggtgacgatatctc T/C gtgatgctgggggagaatc	661
MGST1	28	intron3+4817	attgctatagaagagagtaa G/T gtaagcagaaatagtttc	662
MGST1	29	intron3+6077	tttgaattagtgtcttaa T/C agttatcttttccacagag	663
MGST1	30	exon4+304(3'UTR)	aagaattctgtacttccaat T/G tataatgaatactttcttag	664
MGST1	31	3' flanking+1581	totgtgtgoatgaaoatgaa C/T gogtgoaogogacacacac	665
MGST1	32	3' flanking+1729	tatgtggagaaattgaaaa A/T agtatattotaagccattaa	666
MGST1	33	3' flanking+3407	ggatcactgctaaagatccc G/A gagtactccatgtcccagt	667
MGST1	34	intron1B+36	ggagaaggggaccgcatgca G/A agggaggcagcaggaggg	668
MGST1	35	3' flanking+25	gggtaaacccattttgaata T/C tagcattgccaatatccigt	669
MGST1	36	exon4+266(3'UTR)	aaagaaaatcatacaactca G/A catccagttggcttttaag	670
SULT1A2	1	intron 4 1728	tcagcttctctctttgcaa A/Δ ccaagagatgagctggcctg	671
SULTX3	1	intron 1 6415	tgacctctccctgttagtg G/Δ gggcagctcttccagtgt	672
SULTX3	2	intron 5 2457	goccttaaagggaggttoat C/Δ cttctgtccttccaggctc	673
PIG3	1	5'untranslated region-93	tcgcgaggtatcacagcgccc (CCTGY)n cagcaaatatgttagcoctg	674
ADH2	4	intron 7 + 108	caattgcaaaagggcaagatt T/C tgaanacaaatcaaaataa	675
ADH2	5	intron 3 +(1721-1723)	actcatagaaatttaagaa GAA/Δ ctgttttattctctccag	676
ADH2	6	3' untranslated +(2305-2306)	gttaatgctttccactctc AG/Δ ggggaaggatttgatttga	677
ADH5	1	5' flanking - 115	taactgctgaagttacac G/A ggggaagccctttccgcacaa	678
ADH5	2	5' flanking - 114	aactgctgaagttacac G/A ggaagccctttccgcacaaa	679
ADH7	16	intron 8 + 727	ttcagatccctgtaagccag G/A tattattttaccatttta	680
GSTM1	1	5' flanking - 694	tacgaagtgtactaattaca C/T agtacttagccagatgaccg	681
GSTM1	2	5' flanking - 661	gatgaccgaaggactcagta C/T ccgaggggccctaacagaaa	682
GSTM1	3	5' flanking - 658	gaccgaaggactcagtaacc G/A agggcccttaacagaaaaa	683
GSTM1	4	5' flanking - 656	ccgaaggactcagtaaccga G/A gggcccttaacagaaaaa	684
GSTM1	5	5' flanking - 537	tagagggagactaagccct G/C ggagtagcttcgagtcaga	685
GSTM1	6	5' flanking - 525	taagccctggagtagctt C/G ggatcagaggaagtcctgt	686
GSTM1	7	5' flanking - 465	aattaaattccaggttggg G/A ccaccacttttagctgtac	687
GSTM1	8	5' flanking - 383	gcgagagaaggctgagga C/T accgaggaaggagagaga	688
GSTM1	9	5' flanking - 382	cggagagaaggctgagga A/T ccgaggaaggagagaga	689
GSTM1	10	5' flanking - 378	gagagagctgaggaaccc C/T gggaggaaggagagaga	690
GSTM1	11	5' flanking - 343	aggagagaaggcttgcctc G/A ttaggatctgctgtgtct	691
GSTM1	12	intron 2 + 118	tgctgagctcagggctgtc T/C cttccctgagcccggtgag	692
GSTM1	13	intron 3 + 233	agtgaagtcggctctctc T/C ctgctctgtctatgggaag	693
GSTM1	14	intron 4 + 26	tgaggctgctgaattgt G/A ggggaaggtggcctctcc	694
GSTM1	15	intron 5 + 140	actatcagcagttattctoa C/T gactccaatgtcatgtcaac	695
GSTM1	16	intron 5 + 577	ctgcaaccccttagaagga A/G ctttctacttccctgagct	696
GSTM1	17	intron 5 + 645	gctgtctgagtcagaggg C/T gccaggtgcttggcgctcc	697
GSTM1	18	exon 7 + 519	caccgtatattttagcccaa G/C tgcctgagcgccttccaaa	698
GSTM1	19	exon 7 + 528	tttagcccaagtgttgga C/T gccttcccaaatgtgaagga	699
GSTM1	20	intron 7 + 2421	cagcaccgtgtgaattctc A/G taagtgttagctgtactgt	700
GSTM1	21	3' flanking + 42	attgtctctgcccattctac C/T cagactgtctgtctgtct	701
GSTM2	1	intron 1 + 7	ggaacatccgagggtagc C/G aggtccgctggcggtggg	702
GSTM2	2	intron 1 + 45	ggagcggaggtgctgggg C/T ggggaagtgtggagcagctg	703
GSTM2	3	intron 3 + 70	gactgcattctcttcccca G/C cttagaggttgaagatcag	704
GSTM2	4	intron 3 + 224	agcaggccctgtctctct T/C tgccctgtcatatgggaag	705
GSTM2	5	intron 5 + 100	ttgattcctctgtgtggt C/A ttgtcttgtgtactctaa	706
GSTM2	6	intron 5 + 341	tcctottgtgggttcagg T/C ctgctggttccaggagtg	707
GSTM2	7	intron 5 + 696	acctttagctagacacag C/T gctgatttgtcatttaaaa	708
GSTM2	8	intron 5 + 723	ttgtgcatttaactccttt A/G gctaggcagaaggttctcc	709
GSTM2	9	3' untranslated + 1006	ctcagcccgagctgtccc G/A tttgcatgaaggagcagca	710
GSTM2	10	3' flanking + 139	ttctgtctggcatagtaagg C/T gcttgagaattcttctccc	711
GSTM3	2	5' flanking - 144	ccaacgcccgcattagtcg G/T cctgcccagccctgtgga	712
GSTM3	3	intron 7 + 165	agcctaacttctatccitg A/G aggcactgtctacaaaaaa	713
GSTM3	4	intron 7 + 257	ctgttgactgggtgggtc T/G ttataagattggtgtattt	714
GSTM3	5	exon 8 + 91	ccagtgaggcaacaagcct A/G tatgctgagcaggagcaga	715
GSTM4	1	intron 4 + 67	ttggctgattggagtgct T/C gctcagagtgagctgtgtt	716
GSTM4	2	intron 7 + 77	gatgctttccagctctgga T/G ctgcataaagaataacttc	717
GSTM4	3	intron 7 + 80	gctttccagctctgagct G/A cataaagaataacttcatt	718
GSTZ1	1	5' flanking - 546	agcagggccaccagccgac C/A gctcgaagccggtgagcc	719
GSTZ1	2	5' flanking - 321	tgctgaccagccgccccg T/C aaggagtcacaagagggcag	720

遺伝子名	No.	存在位置	配列	配列番号
GSTZ1	3	intron 1 + 2890	aaaatactgcatcaaaacca G/A gccacgctctgttggggga	721
GSTZ1	4	intron 1 + 2896	ctgcataaaaccaggcoac G/A ctctgttgggggacaccaa	722
GSTZ1	5	intron 2 + 255	tctccaaactgctctcca A/G agccccttggcaaccatgtt	723
GSTZ1	6	intron 2 + 1560	caccactgtttaaggccctg G/C gggggcagagttaaacacaa	724
GSTZ1	7	exon 3 + 94	cottgaaggcatcgactac G/A agacggtgccatcaatctc	725
GSTZ1	8	intron 4 + 297	agaaggaggagtgttctgco G/T ctgtccctctgtgccagg	726
GSTZ1	9	intron 6 + 94	tatctgaaccagcctccac G/A ctgctttgggctgacagtt	727
GSTPI	1	intron 1 + 269	ctccccgggctccagcaaa C/G tttctttgttgcgtcagt	728
GSTPI	2	intron 2 + 134	ccccccgctctctctgtt G/T cccgctctcccccacgac	729
GSTPI	3	intron 5 + 438	gtgtgtcgcgctgctgtgc G/A tgtgtgtcgctgtgtgtg	730
GSTPI	4	intron 6 + 162	ccgcctgctgagtccttag C/T cccctgcccctgcagatctc	731
GSTT1	1	5' flanking - 103	taaaagtgctccagggtgc C/T gtgcggcccaatggggcaca	732
MGST1L1	1	5' flanking - 105	tgctgcgcgtgcccgtgggc G/A gggcggtggcggtgctgct	733
MGST1L1	2	intron 1 + 277	agtgtctgtgagagaagcag G/A ttctggagggtggagtgtg	734
MGST1L1	3	intron 2 + 8030	ggggttatcacagagcccctc G/G gccccaccacacatatgca	735
MGST1L1	4	intron 2 + 8499	gtatggcaggagtggtgtcc C/T ggcaagccatagaggtatg	736
MGST1L1	5	3' untranslated + 468	cgccacctgtgaccagcagc T/G gatgcctcctggccaccag	737
MGST2	1	5' flanking - 46	ggtcagcattcaaaagtcag A/T agcgccatttatcttccgt	738
MGST2	2	intron 1 + 176	gtcacccatgcgcgctgct A/C ccctcctccacagggcaag	739
MGST2	3	intron 1 + 204	tcccaggggcaagcagagac T/C gagaacattccagagattag	740
MGST2	4	intron 1 + 373	ttacaagtgttcaaggaa A/T cgtgcctgcttcaaacctg	741
MGST2	5	intron 2 - 3245	ctctgtatttggccaccto G/A gcctcccaagtgctggat	742
MGST2	6	intron 2 - 1998	aggccgaggtggcggtatca T/C gaggtcaggagatcgagacc	743
MGST2	7	intron 2 - 1640	tgtttattccttgatagcc A/G taatataaagtatgaattt	744
MGST2	8	intron 3 + 41	actgtgttataatgact A/G tgatgcttaecgntaagg	745
MGST2	9	intron 3 + 453	atcagagtgtatgttcag A/G tatatgaacttggcttcat	746
MGST3	1	5' flanking - 520	acaaaaaggccctaacagcg A/C taatccattcacttcggga	747
MGST3	2	5' flanking - 355	cccttaaaacgcgtacggt G/A ctctgctggggacaaattat	748
MGST3	3	5' flanking - 234	ctggaggtagatatatgt T/A ttgagaatgagaggagtaa	749
MGST3	4	intron 1 + 74	agccttttgccaggcactcc C/T atatttcagcctatgcgagc	750
MGST3	5	intron 1 + 682	agaaaaatgccccttcttat G/C tgggtgcccagccaggagcc	751
MGST3	6	intron 1 + 832	cgagttacaagctacataa T/C agcgtccggggcaagtaagt	752
MGST3	7	intron 1 + 1919	aataaaatcctgagtttct G/C tcactcgtcttaccagacc	753
MGST3	8	intron 1 + 1991	tgttaattggccaacaggaaa A/G ttgtactatctttcaatgc	754
MGST3	9	intron 1 + 4458	tcctccatcctcctaataa T/C agttagcttcactctccaa	755
MGST3	10	intron 1 + 4676	tgastatgcaatgcaattgt C/G gggggatagttactttcat	756
MGST3	11	intron 3 + 278	cagctagcccatctaaacc G/C atgttgactctcccaggct	757
MGST3	12	intron 4 + 423	cttgcccttttgggtggg T/G gtaggtgtgtcacagagaag	758
MGST3	13	intron 4 + 506	gtgcagagaagaaacaaag T/C ggggaaggtggaaagggat	759
MGST3	14	intron 4 - 162	tcacagatattttatttcc C/T gactgaactaacttaattc	760
MGST3	15	intron 4 - 130	acttaattctacctaatttg C/G gtggggagtgtgtggcaca	761
MGST3	16	intron 4 - 105	ggagtgttggccaatcat C/G aaattgttaacttttgot	762
MGST3	17	intron 4 - 65	aacatattgttaatacaacc C/T taggtgttaaaaaaggttg	763
MGST3	18	intron 5 + 105	atcccagcactttgggggc G/C aaggcaggcagattgcttga	764
MGST3	19	intron 5 + 197	aaaaatacaaaaattagcc G/A gatgtgtgtgtcacacctg	765
MGST3	20	intron 5 + 222	tgggtgtgcacacctgagt C/T ccagctacttgggggctga	766
MGST3	21	intron 5 + 374	tcttatgctactatatttt T/C ttcttgggaatttgagaaaa	767
MGST3	22	3' untranslated + 517	atgecttacctttatttcca G/T ttacatttttttctaata	768
MGST3	23	3' flanking + 186	agtctgattgtggtgatga G/T gtatagtcatgccacagtga	769
GSTA1	1	5' flanking - 266	ttgcnaaagagcaaatct C/A gtrgaatgtattgtataa	770
GSTA1	2	intron 2 + 1220	ggagacaggctttcctaag A/G tatgacaacaccataactag	771
GSTA1	3	intron 4 + 1813	aaaggcaccactggagggt G/C attattttgcatcacctga	772
GSTA1	4	intron 5 + 732	gaagagtgttgcataagg T/C gtagtcactgcccaaggag	773
GSTA1	5	intron 6 + 333	ttatcccatatgtcccaca A/G tgagccggtctgagcagagc	774
GSTA1	6	3' flanking + 412	ctttcttatgcatttgcaca A/C caatgattctgtctgtgtg	775
GSTA4	1	intron 1 + 280	gcatttgggaaggtgggt C/T gtagctgtccccgggctgac	776
GSTA4	2	intron 3 + 176	ggaaatcacttctatttcaa T/C agttccataaaagctggccg	777
GSTA4	3	intron 4 + 94	acaccacatttacttatgt C/G ttacatagttagttagatca	778
GSTA4	4	intron 5 + 1062	cacactgtgcacctgcaga C/T acccatgggcatccaagagt	779
GSTA4	5	exon 6 + 487	cagatgtattttactccaa A/G ccatttttagctctagaagag	780

遺伝子名	No.	存在位置	配列	配列番号
GSTA4	6	intron 6 + 595	tgagctctgagagcaaatga G/A agatgttagcaccctaaca	781
GSTA4	7	intron 6 + 630	taaacatcaccccaaaaggat T/A cctaccattctcctctgag	782
GSTA4	8	intron 6 + 3943	tcttcgtagtatatataacc T/C tttttgttagccttaagtt	783
GSTA4	9	3' untranslated + 1099	taataacaaccgaatgtcta G/A taatgactctcctctgagc	784
GSTA4	10	intron 5 + (370-371)	gttgctgaacagctgtctca (TA) gctgacatcctcctgataa	785
GSTA4	10	intron 5 + (370-371)	gttgctgaacagctgtctca gctgacatcctcctgataa	786
NDUFA1	1	5' flanking - 1437	agggctaaaaatcctgatta T/A acctacccttgaagctttta	787
NDUFA1	2	intron 2 + 3071	aataaaagtacatggcatat C/A ttgatgggaacagacttgt	788
NDUFA1	3	3' flanking + 1218	aactccatgtgtataaaagca A/G caccacagatgacacttcca	789
NDUFA1	4	3' flanking + 1411	ggattgtgccatcccttgat C/T/G ggcaatgaccttttactttt	790
NDUFA1	5	3' flanking + 1411	ggattgtgccatcccttgat C/T/G ggcaatgaccttttactttt	791
NDUFA2	1	intron 2 + 1087	aacatacaaaaattagccgg A/G tatgtgtggcggcaccgtga	792
NDUFA2	2	intron 2 + 1089	catacaaaaattagccggat A/G tgggtggcggcaccgtgaat	793
NDUFA2	3	intron 2 + 1356	ttccctgaacaacccattg T/C ggccatocagaatocagcaaa	794
NDUFA2	4	3' flanking + 467	cacagcctcatgggtcagcc C/T actccagagggctcattccc	795
NDUFA2	5	3' flanking + 744	ggagcagcgggcccctggcca C/T agccgctggcagtaagcagg	796
NDUFA2	6	3' flanking + (844-845)	tatagtctacaagaatgaa (ACAQ) aaagatcataacaatagcta	797
NDUFA2	6	3' flanking + (844-845)	tatagtctacaagaatgaa aaagatcataacaatagcta	798
NDUFA3	1	intron 2 + 2656	tcctctgtccctccctccgc G/A cactttatcttcccttggc	799
NDUFA3	2	exon 4 + 241	agggcccccagcctggagtg C/G tgaagaaactgtgagcacct	800
NDUFA3	3	3' flanking + 1019	tccttaccctgcactggcacc A/G gctctggagcccagtcct	801
NDUFA5	1	intron 3 + 2155	agactctagcatgtgactct G/C aacataaagttccttgaaaa	802
NDUFA5	2	intron 3 + 2493	ggcatattgtcagttttctc G/T gtctcaatttcacatctat	803
NDUFA5	3	intron 3 + 2712	acaaattttgaactgttcac G/T taacacagcctttttctgaa	804
NDUFA5	4	3' flanking + 1296	aggtatctaaaaggtattgc A/C attgtctattgttctttc	805
NDUFA5	5	intron 3 + (30-31)	aagtcagttttgtgtcttg (GATTTGTGGTATCCAG) tgtaa	806
NDUFA5	5	intron 3 + (30-31)	aagtcagttttgtgtcttg tgtaa	807
NDUFA5	6	intron 3 + (427-428)	attaagtagcagtttaataaa AG/Δ tctagactgctgattcatat	808
NDUFA5	7	intron 3 + (4733-4734)	tataggaatttttaaatata TA/Δ ggatattgaacattcagtt	809
NDUFA6	1	5' flanking - 1148	tttataatttatatagtta C/T gtgctttctttgtatagct	810
NDUFA6	2	5' flanking - 363	actaccaaggagcgccggc G/A cagccggatagcaggacgct	811
NDUFA6	3	exon 1 + 26	ggggagcggcgtccgccaag C/T tacttctaccgccacacct	812
NDUFA6	4	intron 1 + 1318	attcagcagtttgaataacat A/G atgtttgcctggcagaatac	813
NDUFA6	5	intron 2 + 562	agttaaagaatctgaaagt G/C tcagaaatgattaccctga	814
NDUFA6	6	5' flanking - (861-862)	ctgtaaaaatggggtgctga (T) ggtacctacctgacctatga	815
NDUFA6	6	5' flanking - (861-862)	ctgtaaaaatggggtgctga ggtacctacctgacctatga	816
NDUFA7	1	5' flanking - 731	accaaccaaaaggtctatcaa A/G ggggtgtcctctttgcaccc	817
NDUFA7	2	5' flanking - 434	aaagggaaccatcagaaccc C/T gtgatgaaatgagaatcggc	818
NDUFA7	3	5' flanking - 395	gctccgggattccggctggc A/G ggggttagggcaggtagag	819
NDUFA7	4	5' flanking - 100	agaggagtcacgtgcttcgg G/A gagagcctttataggacgtt	820
NDUFA7	5	intron 1 + 92	tcacctcctcctaagccgg G/A acccttcgctctccccgaat	821
NDUFA7	6	intron 1 + 133	ctccctgggaaoocccagct A/C gtcaccccttcagccggga	822
NDUFA7	7	intron 1 + 136	cctgggaacocccagctagt C/G accoccttcagccgggaccc	823
NDUFA7	8	intron 2 + 89	tccttttagacccctgaacg G/C agggctgacatcctgacacc	824
NDUFA7	9	exon 3 + 196	gccgccgggaatctgtgccc C/G? ctccatcatcatgtgtcg	825
NDUFA7	10	intron 3 + 4203	gcctccacccctggggcgcc T/G cctccatcaccccccctcc	826
NDUFA7	11	intron 3 + 4604	gggcctgtgtacgtggag A/G ccaaaagtgggaaggagga	827
NDUFA7	12	5' flanking - (1360-1353)	agggctccagggtcccctgct (CAGAGGOT) aacactggccg	828
NDUFA7	12	5' flanking - (1360-1353)	agggctccagggtcccctgct aacactggccg	829
NDUFA7	13	5' flanking - (1240-1239)	tgatagagccctgatccacc CA/Δ ctctctgaaactctttgct	830
NDUFA7	14	intron 2 + (4142-4143)	cattttgtgactgagtgac AG/Δ gggccacacggggccatg	831
NDUFA8	1	intron 1 - 75	tttgtttctctattctgac C/T cgcagtgaggttaaagctgaga	832
NDUFA8	2	intron 2 + 790	caaacctgacaaaagtgtgc C/T ctttatccagaagtgagcag	833
NDUFA8	3	intron 2 + 900	ttcaggagataaaaagctct G/A attgctcagggcctgagatgg	834
NDUFA8	4	intron 2 + 3837	gaagttgtttgtaagtgg A/G taagaatgtgtactcacata	835
NDUFA8	5	intron 2 + 3942	tcattgtttgcaaaagat G/T cccctaacccagcttcttt	836
NDUFA8	6	intron 3 - 66	gaggagacaccaggagggc A/G ttgatggttacagattctc	837

遺伝子名	No.	存在位置	配列	配列番号
NDUFA8	7	3' untranslated + 520	tttatttctggaccaagtaa A/G gatgggtccgtggcccacac	838
NDUFA8	8	3' flanking + 367	gtcctacaaggaggagcctcc A/G gcatagaagtgcagaaactt	839
NDUFA8	9	3' flanking + 777	attctttttcactactagg C/T tgtttcctccacatctgact	840
NDUFA8	10	3' flanking + 1053	aaagaaaaagcactgtgtga T/A ctgccatggcgcctctgca	841
NDUFA8	11	3' flanking + 1190	gattctctaatgaaaaataa G/T actttttttgcatttttt	842
NDUFA8	12	intron 2 + (449-453)	ggtcattgtgcatgatacttaa (GTAA) aaaaaactaagctgtgtaat	843
NDUFA8	12	intron 2 + (449-453)	ggtcattgtgcatgatacttaa aaaaaactaagctgtgtaat	844
NDUFA8	13	intron 2 + (707-708)	ctcattttggaagaactctc (A) acctgtgtgtacaaaaatg	845
NDUFA8	13	intron 2 + (707-708)	ctcattttggaagaactctc acctgtgtgtacaaaaatg	846
NDUFAB1	1	intron 1 + 8451	cagcacccctgtagaggcctc G/A gcatgctgaagatgccatga	847
NDUFAB1	2	intron 1 + 8495	gacacaggcattctgcagac G/A ctagacaatttagtgacag	848
NDUFA9	1	5' flanking - 807	gatggctottttagaaca T/G gcagattctcaaaaggagacc	849
NDUFA9	2	5' flanking - 769	accacagctaaagaaaaat T/C acaagcattgcgatagaga	850
NDUFA9	3	5' flanking - 353	cacacccattttgtttct C/G ttctccacttttccccctgt	851
NDUFA9	4	5' flanking - 322	ttccccctgtttctgtcccc C/T cttttctctctctgtggccc	852
NDUFA9	5	intron 1 + 447	attcatatgagcacaatgga A/G atgataatattacaatcca	853
NDUFA9	6	intron 1 + 1039	ggcttgatgttcagccctgag G/A caagaattaggagtgttag	854
NDUFA9	7	intron 1 + 4010	aattgtatccaaagagattc T/G caattcctgcatatgaagaa	855
NDUFA9	8	intron 3 + 49	gcacaaataaattactaag G/A taatttttagagtgatagg	856
NDUFA9	9	intron 3 + 107	aattttctccagaatggac C/T aaaggcatcctctgttccca	857
NDUFA9	10	intron 3 + 1183	ctctctgttaattatcacc A/G gattattgtatcccttta	858
NDUFA9	11	intron 3 + 1395	cttctagtttttttccct C/T aagttttgtgtacattgt	859
NDUFA9	12	intron 3 + 2363	agaaaatagtcagatggcc C/T ccaactaacactagtcttta	860
NDUFA9	13	intron 3 + 2608	gtcatttgattacctgagta A/C agtgaactgttaaccttttg	861
NDUFA9	14	intron 4 + 561	attttataaatttttgatg A/C cttaggggtctttatcaact	862
NDUFA9	15	intron 4 + 860	attgtgtagagtaatgacag C/T agagctgtcaacttttttaa	863
NDUFA9	16	intron 4 + 879	gcagagctgtcaacttttt A/T aaaaaataatttagcttaa	864
NDUFA9	17	intron 4 + 893	ttttttaaaaaataatttt A/G gcttaaaaaaattaaaatt	865
NDUFA9	18	intron 4 + 1090	atcattctgttttaaaagt T/C aagtagtgtgaattcagta	866
NDUFA9	19	intron 4 + 1188	aaaccaatccttttttttt A/T tcttcagaaaactttgatt	867
NDUFA9	20	intron 5 + 161	gggtgtgtgtgtgtttga C/T gttttgattgattgctttct	868
NDUFA9	21	intron 5 + 373	ctttctaccccttgacactg C/T agtgtttttgtgccactctt	869
NDUFA9	22	intron 5 + 457	gcacgggaagatgactatc A/C cacagtgcttatgctccttt	870
NDUFA9	23	intron 5 + 3113	gatttttctctcttccaat G/A taagcttcccttaaaaaaa	871
NDUFA9	24	intron 5 + 3339	tctaaactcaaaacaggttt G/A ttgtgtattgttttagctg	872
NDUFA9	25	intron 6 + 414	tatagttttgctttttccag G/C atattacatataatggttag	873
NDUFA9	26	intron 6 + 518	ctttctattttctatcag T/C tgtatgctcattttttata	874
NDUFA9	27	intron 7 + 974	ggattatgcgtacttgaaa A/G tacttgatagcgggtgatta	875
NDUFA9	28	intron 8 + 368	acattaatttttagtgagta T/G cacaatgcctccagaggctg	876
NDUFA9	29	intron 8 + 954	gcattcaatcagttatag T/C ctagataagaattacaattc	877
NDUFA9	30	intron 8 + 1253	tcctcttgaaattgtagata G/T gtatctacacatttctcatc	878
NDUFA9	31	intron 8 + 11608	gaaaagatagatataaat G/A accaaaaattcgtgaagaaa	879
NDUFA9	32	intron 8 + 11930	ctacaaatatattctaaatg C/T gtaatcatggataagtacaa	880
NDUFA9	33	intron 9 + 1998	tgtttttcaagcctttaaac G/A gctgtggaaccctgtgtcca	881
NDUFA9	34	intron 9 + 2238	ccagctacttggaggctga A/G gtggaggatcaacttgagcc	882
NDUFA9	35	intron 9 + 2885	acagcggctgtcttctctgc A/G gttctcataggctagcttac	883
NDUFA9	36	intron 10 + 801	tacaactaaagtctctctac G/A ttataacttgagaaagtgtt	884
NDUFA9	37	intron 10 + 910	tgcagactttcagggtggta G/C gatgaggattgctgtgct	885
NDUFA9	38	intron 10 + 1180	aaaactgagtcagaacgccc G/A tgcacagaaaacaggggct	886
NDUFA9	39	3' flanking + 554	gtgccagcaactagggaatta T/G gaccttctaataagttctt	887
NDUFA9	40	5' flanking - (1129-1128)	taaacagtaggggcaagata (TC) gattggaacagccaagatt	888
NDUFA9	40	5' flanking - (1129-1128)	taaacagtaggggcaagata gattggaacagccaagatt	889
NDUFA9	41	5' flanking - 341	tgtttctcttctccacttt T/A cccctgttctgttcccccc	890
NDUFS1	1	5' flanking - 3	tcttaggggctgtgtgtgt C/G cagacagtttagcagaacag	891
NDUFS1	2	intron 1 + 445	gtgttagcaatggctcaagc T/C tctgtttgtgtcctgttt	892
NDUFS1	3	intron 1 + 470	ttgtttgtcctgtttgttt G/T gtccattgaccacgttggac	893
NDUFS1	4	intron 1 + 502	acgttgagacagcatttttt A/G ttcttttaactaacgggaaa	894
NDUFS1	5	intron 1 + 557	ttttgaaaagttagccagg A/G ttgcattgcaataacaaaa	895
NDUFS1	6	intron 1 + 5218	tatctcagaatattctcagga A/G catttagtagacgctatgc	896
NDUFS1	7	intron 3 + 1371	aagocctaaaatagatagt T/G caatgggaatgaaaaaaga	897

遺伝子名	No.	存在位置	配列	配列番号
NDUFS1	8	intron 5 + 414	tttgaacagggtctact A/G tttgtccaggctggcgtt	898
NDUFS1	9	intron 10 + 812	gggtgoggtggcgatctc G/A atctcggtcactgcagcct	899
NDUFS1	10	intron 11 + 233	ggaggccaaggcaggcagat C/T gcctaagtgcaggattga	900
NDUFS1	11	intron 11 + 283	ggccaacatggcgaaacccc G/A tctctactaaaaatacaaaa	901
NDUFS1	12	intron 11 + 585	ctgtatgtcttaatttaa G/T taaattgcattttatctat	902
NDUFS1	13	exon 12 + 1251	gcaccactgtttaatgctag A/G attcgaaaggagttgtaat	903
NDUFS1	14	intron 13 + 5159	attacttttagaaaacgtgt T/C ttagctgatactcaggcata	904
NDUFS1	15	intron 14 + 250	aaaaattgttatattagttt G/T accttgggtcaaaaattgca	905
NDUFS1	16	intron 14 + 550	gataaagtctcactatgttg C/T ccagggtgatctcaaacctc	906
NDUFS1	17	intron 14 + 2429	ctgaaatcacaaaattagc C/T ggggtgtgggcagtgccct	907
NDUFS1	18	intron 14 + 2530	ttacagtgagccgagatcac G/T ccactgcgtccagcctggg	908
NDUFS1	19	intron 14 + 2659	acacatttaatttttcat T/C gaaaatactgcagttatgt	909
NDUFS1	20	intron 16 + 150	agaaaacatgtattcagaaa C/T aggaattcaaggttacagt	910
NDUFS1	21	intron 18 + 279	cactgtgtagcaattttag T/C gaattttccaaagtggcaaa	911
NDUFS1	22	3' flanking + 182	tctaggataattataattaa T/A aataatcatagtaacaatgg	912
NDUFS1	23	intron 11 + 3226	aaatgtattgtctgtcttt T/Δ aacattttgtaatagtaaat	913
NDUFS3	1	5' flanking - 194	tctgcacacaggagctagaa C/T cagctcacctcagcatttc	914
NDUFS3	2	intron 1 + 46	cggggtcaggccagcggcg T/C gccagtgagagagctcct	915
NDUFS3	3	intron 6 - 439	aaagctgtgtcaatgtact G/A ctttagatctggactgtgaa	916
NDUFS3	4	intron 6 - 280	gggtgtgtgagcagtoagttc G/A gagctcctgtgtggagtg	917
NDUFS4	1	5' flanking - 439	aaotgaatcacagccctgtcc T/A gagggttcgaaagtgaatc	918
NDUFS4	2	intron 1 + 1829	gaaaaaaattcttaagcca G/T ggaagcagtttttaaatac	919
NDUFS4	3	intron 1 + 2057	attaetgtggaastotaaot G/G taaaattcattttatgtaa	920
NDUFS4	4	intron 1 - 521	ttcattttaactaattttt T/G tctccattttgtgaatgg	921
NDUFS4	5	intron 3 - 1259	ataaattatgatattatta G/A tactaatatagcgaagcata	922
NDUFS4	6	intron 3 - 1174	aatatataattatagaaa T/C ctccagagtagcaaccatgt	923
NDUFS4	7	intron 4 + 10682	cacaatataggcacaaactt A/C ctacaaagcactaacaggt	924
NDUFS4	8	intron 4 + 12299	tttactatagatatagg A/T atagactatagagtatctct	925
NDUFS4	9	intron 4 + 12560	accaasteaggtattatgca G/A gctcatctttttataaga	926
NDUFS4	10	intron 4 + 18801	ggaaaagattgtgttgcgg T/C gtatccgaaacctctgtat	927
NDUFS4	11	intron 4 + 19888	tgcacagctgagagagca A/G gggctgtgttttcagtaccc	928
NDUFS4	12	intron 4 + 20178	agaaaagctgagatataat G/A tctaaacttaccattcttaa	929
NDUFS4	13	intron 4 + 23016	ctactctgtgaagtaaggt T/A atgttgaaacagtaaataa	930
NDUFS4	14	intron 4 + 23124	actttctttggagatggagt T/A ccagcagttgggaatgtaat	931
NDUFS4	15	intron 1 + 766	tgtgatgttttttttttt T/Δ ggcgtatttaaccttcaatt	932
NDUFS4	16	intron 1 + 1261	ttctctctcttttttttt T/Δ gagatacatttotoacttga	933
NDUFS5	1	intron 1 + 388	ccaaacatagccagcacttc C/T ggcgtgaactcogggotgtt	934
NDUFS5	2	intron 1 - 13082	agttagccgagattgcacca G/A tgcattccgcctcggcacc	935
NDUFS5	3	intron 1 - 12905	gttttcaacaaaggactcca G/T agtagtagagagtttctgt	936
NDUFS5	4	intron 1 - 12564	attttcatcacacctcaact T/G aaggtataacagccttaaga	937
NDUFS5	5	intron 1 - 12561	ttcatcacacctcaactaa G/A gtataacagccttaagaatg	938
NDUFS5	6	intron 1 - 10561	aacaatgtgttatagtggg C/G ggggtgtgagcaggtgtcat	939
NDUFS5	7	intron 1 - 9065	cctgalgtctctgtctccag G/A gtagaccttttccctttaga	940
NDUFS5	8	intron 1 - 8871	tcaccacgtgtctgtagata T/C aggaccgagaccttgcgtt	941
NDUFS5	9	intron 1 - 7312	aaatccttggcttctagaat G/T ggtcactgatgttatataat	942
NDUFS5	10	intron 1 - 6827	aacctctgctctcccgattc A/G cggcattctctgctcagc	943
NDUFS5	11	intron 1 - 6725	agtagagacgggtttcacc G/A tgttagccagcatgtgtcgc	944
NDUFS5	12	intron 1 - 6631	aggcgtgagccactgogccc G/A gcctagaccttcttctata	945
NDUFS5	13	intron 1 - 6531	cccaacagctcccaatgtaa A/G acagatctattaatattctg	946
NDUFS5	14	intron 1 - 6346	gcaacagatcttgacctata T/C cccatagggtacagctgagg	947
NDUFS5	15	intron 1 - 6327	atcccatagggtacagctga G/C gactttaatcagasaaggag	948
NDUFS5	16	intron 1 - 6122	tagccttgttttactctac T/C gttctctcccaactcacacc	949
NDUFS5	17	intron 1 - 2512	acaaactcttaagtogaatt T/C tgcagatcaaaagtgagctta	950
NDUFS5	18	intron 1 - 1945	tttaatctccttttaattt G/A caatttcaaaccttaggta	951
NDUFS5	19	intron 2 + 75	ttttttttttttttggac G/A aagctcactcttcttccct	952
NDUFS5	20	intron 2 + 148	ctgtagcctctgcctcccag G/A ttcaggcgattcgcgtacct	953
NDUFS5	21	3' flanking + 150	cagattcaagtggttctcct G/O cctcagcctcccaagtagct	954
NDUFS5	22	intron 1 - (10682-10681)	attataaacactaaacaaac AT/Δ gtgtgtctcttttagagggg	955
NDUFS5	23	intron 1 - 10272	aggacaagtgactacccctg A/Δ aaaaagaagagatgaacaa	956
NDUFS5	24	intron 1 - 2069	accagacagagttcccttta C/Δ ttgttttctgtggcaaga	957

遺伝子名	No.	存在位置	配列	配列番号
NDUFS6	1	intron 1 + 26	ggccgctgggtacaggatgc A/C ccttcctccagccgaccto	958
NDUFS6	2	intron 2 + 1076	ggatcatgggtgggagagg G/A gcttgtcttgggtttg	959
NDUFS6	3	intron 2 + 1260	cagttgtcagtaagtgggtg T/C atagggttaagtctctttct	960
NDUFS6	4	intron 2 + 1413	caaaggagctcatggcattg C/T gaatgggacatttctcgt	961
NDUFS6	5	intron 2 + 1568	tggagaaggggaggtttctc T/C tagtgtgagtcggtatgt	962
NDUFS6	6	intron 2 + 1692	gaccgtggtgacggaggtt C/T ctgggcatcgatgggtgt	963
NDUFS6	7	intron 2 + 6488	tagotttaataattttggc A/G ttcatgttcgaatgootga	964
NDUFS6	8	intron 2 + 6563	tttaacttttttttaaat G/A tccatgaatgggtcggtat	965
NDUFS6	9	intron 2 + 6740	aaagatttaaacctacatat C/T ttatgcccaatcatttgat	966
NDUFS6	10	intron 2 + 6832	gcgagggactcattttacag A/T ggttgacacttcactgtgt	967
NDUFS6	11	intron 2 + 7054	ttcactgcggagagcttggcc G/A tgtgaaccggagccggct	968
NDUFS6	12	intron 2 + 7186	ggtcaggttcacccttgagc T/C gcgcacactaaatgacggga	969
NDUFS6	13	intron 2 + 7225	gaggagcatcccgctcagtc G/A ccagtgtcagagcgtcagca	970
NDUFS6	14	intron 2 + 7810	cttcactctgtggcgggga C/T gctgtagaaggagcacaaag	971
NDUFS6	15	intron 2 + 11080	gtaactgttcagtcctttct C/T ctttggatttcatttaato	972
NDUFS6	16	intron 2 + 11657	ggagacagaacgatgtgtgg G/A gagaagaggcgtggcagag	973
NDUFS6	17	intron 3 + 208	cgaaaccccttcactg T/C gaagtgttggcgcatgtt	974
NDUFS6	18	intron 3 + 1031	ctagagtgggactgggcacc C/T ggcagtcctcctcctggct	975
NDUFS6	19	3' flanking + 270	gcttcagagagccaagtg G/C tcttgagtgcatagtgaag	976
NDUFS8	1	5' untranslated - 45	agtgtagcctgcctcccg A/C ttgactggcctgottggcaa	977
NDUFS8	2	intron 1 + 163	aggtgcagcggggagccggc T/C ctccggcgcatcgccggcc	978
NDUFS8	3	intron 3 + 123	tccttgagcctgtttccact T/C ttaaatgattatgtgatg	979
NDUFS8	4	intron 6 - 505	aggcaaggcagccggggcac G/A gtggctcagcgttgaatcc	980
NDUFS8	5	3' flanking + 491	ggocctgagctggcctgct C/A cagccacatcctcttctcg	981
NDUFS8	6	3' flanking + 693	ttcacttcatttcagtgag G/A aaaccagctccgagaggtga	982
NDUFS8	7	3' flanking + 1267	ttttcccgagtaaccggc G/A tcagagcgtgcatggagcc	983
NDUFS8	8	3' flanking + 1362	cgctgggtctttcccttac C/T gtggctcaccaggcacttac	984
NDUFS8	9	3' flanking + 1449	tgtcagaaacccctatggc G/A cccaaccacaagtccccaa	985
NDUFS8	10	3' flanking + 1572	cagccccacaggcctgtgt C/A gctgtgtgggcttagggat	986
NDUFS8	11	3' flanking + (783-784)	cagagaccttgaccccccc (G) atctaccatcatttccaaaa	987
NDUFS8	11	3' flanking + (783-784)	cagagaccttgaccccccc atctaccatcatttccaaaa	988
NDUFB3	1	5' flanking - 1439	ttaaagtgtactttttct G/A ccgggcacgtgtgctcagc	989
NDUFB3	2	5' flanking - 1436	aaagtgtactttttctgoc G/A gccagcgtggtcagcgtg	990
NDUFB5	1	5' flanking - 213	ggcggatgaaactctctac A/C aagaaggccaaaccggcgg	991
NDUFB5	2	intron 1 + 6288	gggatatttattaccatag T/C cagtaagtaagaaagcat	992
NDUFB5	3	intron 1 - 1581	ctctgggcccactgtatct A/G ttctttccctgtttacct	993
NDUFB5	4	intron 1 - 1487	ccctcttagaocgtatag T/G totagcataggtctgcaca	994
NDUFB5	5	intron 2 + 556	ttgtctgaccatctgccac G/A gtagataaagctctgaatca	995
NDUFB5	6	intron 3 + 467	ggcccatcgcactccagcc C/T gggcaacagagtgagactct	996
NDUFB5	7	intron 3 + 497	agtgaactctgtcccccc C/G caaaaaaaactataatct	997
NDUFB5	8	exon 5 + 397	atgatagctctgaaaagata T/C atgaagaacaatggcgtc	998
NDUFB5	9	intron 1 + (231-216)	attagcatttctaaaacgtt GTT/Δ attccatccoaattaatg	999
NDUFB7	1	intron 1 + 68	cctgaacacctggcacccca G/A ggctggcaccacagggtgg	1000
NDUFB7	2	intron 2 + 266	ggcctctctagggcctgtt T/G gatgggacaggcaggtgg	1001
ABCA1	1	5' flanking - 278	gggcccgggggggggaggg G/C acgcagaccgggaccctaa	1002
ABCA1	2	5' flanking - 99	acataaacagagccgggaa G/C gggcggggagggagagag	1003
ABCA1	3	intron 1 + 159	gcggtgttaaatggggagao G/T atgtcctagtacagactctg	1004
ABCA1	4	intron 1 + 506	gaattggctatgtctccc G/C ggactggagcggcacagtcc	1005
ABCA1	5	intron 1 + 5897	gtcaaaaacccttagcttt T/G gcaaacctcctttaagacc	1006
ABCA1	6	intron 1 + 5929	ttaaagcccatttaaatgc C/T tcctctctatgaagctctt	1007
ABCA1	7	intron 1 + 5962	aagctctctgtgactcactc T/C ttccatcactaagtgtaaa	1008
ABCA1	8	intron 1 + 5985	ccctcctaagtgtgaagt A/C agatccctctcttcttactt	1009
ABCA1	9	intron 1 + 11416	ttacagtgcctttatagga G/A agaagaagaattgtgtct	1010
ABCA1	10	intron 1 + 11935	tcctctgtggagcaaatagag G/A gctgtctgacacttggttcc	1011
ABCA1	11	intron 1 + 12281	gaatgttgatttgtaaaa T/A ctttaaacagtagttttt	1012
ABCA1	12	intron 1 + 12924	gtgctgacaactcttactc T/C aggtgaacctccgggag	1013
ABCA1	13	intron 1 + 13002	gagcctcaatcacagattct C/G tctagctcacatgaattaa	1014
ABCA1	14	intron 1 + 17715	ggagcatgacttttggag C/T ctctctcttccaccagag	1015
ABCA1	15	intron 1 + 17848	gaggctgactgtaccctt T/C gataggagcccagcactaaa	1016
ABCA1	16	intron 1 + 21384	gtgggtggggaattggag G/C aggaagcttgctaagtgtg	1017



遺伝子名	No.	存在位置	配列	配列番号
ABCA1	17	intron 1 + 22145	gtagcttctaatacaacgaa C/G tgattcctggagagcagctt	1018
ABCA1	18	intron 1 + 23063	ggagggaacctgtgacaccca G/A cggagtagggggcggtgtg	1019
ABCA1	19	intron 1 + 23131	agtgtgcataatgtgctgacc G/A tgggagcttgttttcggtt	1020
ABCA1	20	intron 2 + 156	ggacacaggactgtgtgtc T/C ggatatggcatgtgcttat	1021
ABCA1	21	intron 2 + 384	gctgtgggtgaagtgaatta A/G tggccccaactcttagagatc	1022
ABCA1	22	intron 2 + 1081	agtgcagccaaaattgcaaa G/A tcataccattcaaatata	1023
ABCA1	23	intron 2 + 2801	aagaaaagtgtatttttca A/G gttgctgatgcttagattgt	1024
ABCA1	24	intron 2 + 2830	tgotttagattgttaggtt C/G aaagatctggttgcatttt	1025
ABCA1	25	intron 2 + 2856	tctggcttgcattctgtaca A/G ctgacagaactgggctcag	1026
ABCA1	26	intron 2 + 3187	tgatagctgttgcctgcagc A/G taaggacgttcattgcagc	1027
ABCA1	27	intron 2 + 3190	tagctgttgcctgcagcata C/T ggacgttcattgcgcagttc	1028
ABCA1	28	intron 2 + 3194	tgttgcctgcagcatacga C/T gttcattgcgcagttcctgt	1029
ABCA1	29	intron 2 + 3204	ggcatacggacgttcattg G/A cagttcctgtctcctgagat	1030
ABCA1	30	intron 2 + 3401	acataaagcctgtgtgtgc T/C gccaggaagactagaacgc	1031
ABCA1	31	intron 2 + 13927	gtcacacatacctggcact A/G tgetaaggctgggaatgcag	1032
ABCA1	32	intron 3 + 4163	ccagcccacttcattacc G/A tagttacctcttagagtat	1033
ABCA1	33	intron 3 + 4262	tgtcaagaggaaactaagg T/C gccaggacatttctgcttag	1034
ABCA1	34	intron 3 + 4306	ccctctcactaacttccaa C/T gctgtatcatgaaccccat	1035
ABCA1	35	intron 5 + 240	gacagaagaaaagtccccc G/A gaagaatactacagacttg	1036
ABCA1	36	intron 5 + 490	gatggcatttgacttgtt G/A tctttaaaaagtgaattctt	1037
ABCA1	37	intron 5 + 583	tatctggggagtggcattt T/G ctgactggacattggctgc	1038
ABCA1	38	intron 5 + 1051	ggctacaacactgtgtttc C/T tgggcagtaaaaggacaa	1039
ABCA1	39	intron 5 + 3051	tagagaacaagtctaattct G/A ttttcttgaatagtcgaa	1040
ABCA1	40	intron 5 + 3127	aagtccatgatttttaggc A/G aaatggcctcctttctctt	1041
ABCA1	41	intron 5 + 5924	ctttcttcacaaaattgcc C/T cccagagctttctggaagg	1042
ABCA1	42	intron 5 + 6831	ccagtcctcagccttccca T/C tgcctatgtgtgttgaaa	1043
ABCA1	43	intron 5 + 12678	gctcacgcctctgtcaccc G/C accctctggccatctctct	1044
ABCA1	44	intron 5 + 14214	cagcttgcctccagaggcct G/A gacctgggtccagaggtcc	1045
ABCA1	45	intron 5 + 14257	gctgttcccccgttggtc C/T cagaggcctggatgtgtgc	1046
ABCA1	46	intron 5 + 18078	cctaccacacacatgcacgtg C/T acagccaagggttgtgact	1047
ABCA1	47	intron 5 + 18795	ctggcctcttctggaactg G/A ccagctaaaaggaaatctcc	1048
ABCA1	48	intron 5 + 18948	gcattgtgtactaagaac G/A catattccctatcctatagg	1049
ABCA1	49	intron 5 + 19053	ctcccccaaatataaagt T/C aaggatgcttattcaaatg	1050
ABCA1	50	intron 5 + 19148	ggcccaagaaactgatttt C/A gcatgctccctaataagac	1051
ABCA1	51	intron 5 + 19229	atgctaaccgtttagagtc C/T atgtgatgggaagcatcagg	1052
ABCA1	52	intron 5 + 19405	cttgcctaatattctgtc T/C atataactcaatattactga	1053
ABCA1	53	intron 5 + 19534	catgtgacctcttagctcc G/A cggattaactcctgtcctca	1054
ABCA1	54	exon 6 + 474	gaacacctctctgtgttct G/A tatcacaacctctctctccc	1055
ABCA1	55	intron 6 + 210	gcaacctggcgtcatggcc A/C gctgtttaaataaaattga	1056
ABCA1	56	intron 6 + 334	acagttctgaggcaataacc G/A tggtaagggttattgatct	1057
ABCA1	57	intron 6 + 2288	ctttcttcaagcttgggt C/T cactggaccacgtatgaagt	1058
ABCA1	58	intron 6 + 2322	atgaagtgaatgttttgg T/C ccagaaagggaattaaagtaa	1059
ABCA1	59	intron 6 + 2820	gtgctttgatacttctgag T/G ttcagtaagagacctgatg	1060
ABCA1	60	exon 7 + 656	tgagctttgtgcttaccac G/A ggagaaactggctgcagcag	1061
ABCA1	61	intron 7 + 416	catcataaagatgacattgt G/A ggctgtcacagttgaaggc	1062
ABCA1	62	intron 7 + 471	agccacacactatttagctta C/T ttagtataacattgcaag	1063
ABCA1	63	intron 7 + 504	ttgcaagaaaaattccgac G/A aagtttttcagcctaggaa	1064
ABCA1	64	intron 7 + 879	gctctgtgaaattcctctc G/C ctaccccaacatcatcatt	1065
ABCA1	65	intron 7 + 1740	acaaatgctcacccttcag C/T tggaaatgattgaattttgg	1066
ABCA1	66	intron 7 + 2122	tgattaaggtggtctactacc A/G ggtgctttctgatatctcg	1067
ABCA1	67	intron 7 + 7753	taggaattccaagctgtgaa T/C ttttactgaagctctttgg	1068
ABCA1	68	intron 7 + 8973	atggaaatttttatattg A/T ctacagattgccaatattat	1069
ABCA1	69	intron 7 + 8976	gaaattttttattattgact A/G cagattgccaatattattg	1070
ABCA1	70	intron 7 + 11327	ctaacaatcttattccatt G/C agtccttataaaagaagtgg	1071
ABCA1	71	intron 7 + 11738	ctgaogtttaaggagacog C/T gtaggtcccttgaggactg	1072
ABCA1	72	intron 7 + 12295	agtctgaaattattgtct T/A tttttctttagcttatgct	1073
ABCA1	73	intron 8 + 387	tagcaaggccaatctttta C/G caacacacatgcttgataac	1074
ABCA1	74	intron 8 + 697	ggaaactgtctgtgtccccc A/T gcatagggaagctgagccagg	1075
ABCA1	75	intron 8 + 1312	attgctctgcagatccctc G/A cagccctctgtccctgttc	1076
ABCA1	76	intron 8 + 3036	ctttatgtggagaaattt T/G ttttttgattgggggtgg	1077

遺伝子名	No.	存在位置	配列	配列番号
ABCA1	77	intron 8 + 3176	aaatggcctgtgtotgtgc C/A cctttctgtctgtatgcctc	1078
ABCA1	78	intron 8 + 3364	ggcagaaaggcaagcttagg A/T cctagagagtgtggaccac	1079
ABCA1	79	intron 8 + 3373	caaaagcttaggacotagaga G/A tgcaggaccacgccactcac	1080
ABCA1	80	intron 8 + 3561	cagggatttataatgattt C/A ttgtgaaatgtttgaaata	1081
ABCA1	81	intron 8 + 3654	agtgcoggaatacatttga T/C gtaagacagaaogotgcotg	1082
ABCA1	82	intron 8 + 4715	ggcagaggggtctcagaato C/T gcatttccaacaatgtctcc	1083
ABCA1	83	exon 9 + 936	cgctttctgtcgggcatoc C/T gggggggggggotgaagat	1084
ABCA1	84	intron 9 + 2309	ccctcaagagtcagtttaa A/G tgttggctatgttagttgc	1085
ABCA1	85	intron 9 + 2392	atggaggggcttggcttoa T/C gaaaacattttccagatca	1086
ABCA1	86	intron 10 + 228	tggagatggggagactggc A/G cagggctgtgtgatgggt	1087
ABCA1	87	intron 10 + 319	ttctcggctccctggctccc C/T acctgactccagtgaaacaa	1088
ABCA1	88	intron 11 + 377	gaaagaagtgtggagcaaa A/G gcattgtttacatgtagac	1089
ABCA1	89	intron 11 + 521	agtgcctcagagacaattgg G/A ttaaatgtggagcagggtg	1090
ABCA1	90	intron 11 + 2850	ctctatacaatcattatgt G/C ccattgaaataataataca	1091
ABCA1	91	intron 11 + 2876	ctccattcggtagaacag A/G gcttcattctctctgtcgaa	1092
ABCA1	92	intron 11 + 3056	gtttgcagctgtgttttt C/T ggcagcacatctgtcaggc	1093
ABCA1	93	intron 12 + 340	ggcattatttggaaactta T/C ctaaaatgaattcgggtcc	1094
ABCA1	94	intron 12 + 381	aattaaattttgaaatttt A/G tattaataattatattagta	1095
ABCA1	95	intron 14 + 1728	caggctcagagccttgccc C/T atcaccctggctcacgttg	1096
ABCA1	96	exon 15 + 2040	atgggctgggacaacagcat C/A ctctgttttagctgttcoet	1097
ABCA1	97	intron 15 + 1382	cttttagacagaaagttaac G/A tgggatattatctcccacag	1098
ABCA1	98	intron 15 + 1453	tataaaggagaaccagtt G/A aaattacctattgaagaac	1099
ABCA1	99	intron 15 + 1567	ttctgcgtatgtttggtaa G/A tcaattctctcttttaggat	1100
ABCA1	100	intron 15 + 1817	cagttgcctcatcagaaaga T/A gaacagcattacgcctctgc	1101
ABCA1	101	intron 16 + 95	egtgcagacagagatgat T/A gtcttttcaaatggacatg	1102
ABCA1	102	intron 16 + 452	tgtgttttggctgagtaac G/A ttttctgaactaagcacac	1103
ABCA1	103	intron 16 + 657	ctgtgcctcagctctgggt T/C cataggcatcagcagcccca	1104
ABCA1	104	exon 17 + 2473	gcttcaatctcaccacttgc G/A tctccatgatgtgtttgac	1105
ABCA1	105	exon 18 + 2649	ggttccaaccagagagaat A/G tcagaaagtaagtgtgttg	1106
ABCA1	106	intron 18 + 1730	tgaagtccaagcagctgc C/G ctgtgtccttcactccact	1107
ABCA1	107	intron 19 + 428	aggactctacagtggtagt A/G tcaggagggtcagggtcg	1108
ABCA1	108	intron 19 + 468	aaagcaaccagcgttagocto A/G gtggottccagcaogattcc	1109
ABCA1	109	intron 20 + 876	ccctctcatcataaagtga C/T acatggggctcatgtcagg	1110
ABCA1	110	intron 22 + 118	catgggatactctctgtta T/G cacagaagagataaaggga	1111
ABCA1	111	intron 22 + 560	aaagctttgccattctaggg G/A tcaatgccatacagggtga	1112
ABCA1	112	intron 23 + 102	accccttttgccattgtga A/G ccaccatctcctctgtctgt	1113
ABCA1	113	intron 23 + 287	gtcaaaagaaagagacttgc C/T aagggttaagagccttgct	1114
ABCA1	114	intron 23 + 1063	acctttcaccctcaggaagc G/A aggtgttcacacggcacac	1115
ABCA1	115	intron 25 + 321	ctctttactaagtaacgtg T/G gaggaacagoggcctcagga	1116
ABCA1	116	intron 25 + 376	gttagaattcagcaacttg G/C gccagctcagacactactga	1117
ABCA1	117	intron 25 + 478	catacataggaaatgacaaa C/T gtttatggatggatagtcta	1118
ABCA1	118	intron 25 + 579	tcatttaattctcaaaaaa G/T atgaaaaatgaacactcag	1119
ABCA1	119	intron 27 + 153	aatggttaaaagccactgtt C/T ttgcagcatcgtgcattg	1120
ABCA1	120	intron 28 + 1058	actatcatggagataatga C/T tatgtgttccatgattgga	1121
ABCA1	121	intron 28 + 1317	caggaccacagttgttgcgt C/T acctgaatgtgagcactat	1122
ABCA1	122	intron 30 + 372	tatatgttttttagttttg T/C ttatcagcttcttcgctttt	1123
ABCA1	123	intron 30 + 508	cccttttaaaagtaagcagt A/G gataaataaattcagtgaag	1124
ABCA1	124	intron 30 + 1033	ctgaatttcattgtgccttt G/C attttccacatgaaggtgt	1125
ABCA1	125	exon 31 + 4281	tttccctttgcagagacac G/A ccttgccaggcaggagga	1126
ABCA1	126	intron 33 + 626	ggctccttgaactgatttc C/T gtctttctctctgcctttt	1127
ABCA1	127	intron 33 + 719	taatagccctcatgtagaa G/A ggagccggagcctgtgtata	1128
ABCA1	128	intron 33 + 726	cctcatgctagaaggagoo G/A gagcctgtgtataaggcoag	1129
ABCA1	129	intron 33 + 889	ctttctcaatgtctcagct A/G tctaactgtgtgttaatca	1130
ABCA1	130	intron 33 + 1097	ctgtgcaccccaactgtctgg G/C ttttaatgtcaggctttct	1131
ABCA1	131	exon 35 + 4760	tatgacaggactggcacca G/A aaataatgtcaaggttaacc	1132
ABCA1	132	intron 35 + 234	aacotctataaacotcagtt T/C ootcatctgtgaaatggaga	1133
ABCA1	133	intron 37 + 411	aactctgtacattttatcag C/T agcttalccatccattgcaa	1134
ABCA1	134	intron 37 + 1224	caggoataggtgattoagag A/G tgaagggtcaagtcctgaa	1135
ABCA1	135	intron 37 + 1720	aaattaataattctctgact G/T ggaatccatcgttcaglaag	1136
ABCA1	136	intron 40 + 251	tgaaggtaaggaaatagtg T/G tatttgcttgatocactgg	1137



遺伝子名	No.	存在位置	配列	配列番号
ABCA1	137	intron 40 + 252	gaaggtaaggaataatgtg T/C atttgccttgatccactggc	1138
ABCA1	138	intron 40 + 319	agcactggaagaaagtcacacc A/G taactttgagaattaggtga	1139
ABCA1	139	intron 40 + 957	cttgctactcttttttccctt G/C tcatgggtgatagccatttg	1140
ABCA1	140	intron 41 + 146	tgatgtgggcaccccgagc C/T cctccctgcccatcctgga	1141
ABCA1	141	intron 42 + 239	cattggtttatatgcttac A/C ttatgtgttagttattaaa	1142
ABCA1	142	intron 42 + 321	aataaatggttgatttgag T/A ttgagttcatagtcacaaa	1143
ABCA1	143	intron 42 + 322	ataaatggttgatttgag T/C tgagttcatagtcacaaa	1144
ABCA1	144	intron 42 + 533	agatgaaaaatattgtagat G/A ataataatgatacggttct	1145
ABCA1	145	intron 42 + 546	tgatagtgataatgaatgat A/G cggttctaaaaagcaggtt	1146
ABCA1	146	intron 43 + 739	tacagccacacttaaatgg T/A cccattatgaatacatatt	1147
ABCA1	147	intron 44 + 18	taggtggaagaagagtgcc T/C tgtatttgctgcaagact	1148
ABCA1	148	intron 44 + 264	acaataaattgctgttt T/C ttaagagtataatttagtga	1149
ABCA1	149	intron 44 + 279	tgtttttaagagtataatt T/C agtgatttttgtaaatga	1150
ABCA1	150	intron 44 + 508	tttaccattgctacataaaat C/T cccctatgtacatgtacct	1151
ABCA1	151	intron 44 + 1477	gatctcctctcctgtctctt A/T cattttgcagtagcaatgt	1152
ABCA1	152	intron 44 + 1685	tggtgtgaagaactgatttg G/A ttggtatagctgtgaggcc	1153
ABCA1	153	intron 44 + 1956	gtgtgtgctacactcaaaat T/G tctgggccttctcatttggt	1154
ABCA1	154	intron 45 + 88	aatatataccttattggttt T/C ccacacgcattgacttcagg	1155
ABCA1	155	intron 46 + 808	ttatactgactcaatagag G/C ttacagacaaaagtgttt	1156
ABCA1	156	intron 47 + 336	ttcaccaattgtaaacaccac T/C acactgaacagcatcatccc	1157
ABCA1	157	intron 49 + 55	agggtgtggtatcctgcccc G/C acactccgcccataaggtcc	1158
ABCA1	158	3' UTR(exon 50)+7949	aaacaaaattggtgtgtctc C/T aggcacgggaacttggttc	1159
ABCA1	159	3' UTR(exon 50)+8226	aggagcccaactgtaacaata C/T tgggcagccttttttttt	1160
ABCA1	160	3' UTR(exon 50)+8882	aactcttccactttttcca G/A aatttgaatatlaacgctaa	1161
ABCA1	161	3' UTR(exon 50)+8897	ttccagaatttgaattata C/T gctaaagggtgaagacttca	1162
ABCA1	162	3' UTR(exon 50)+9097	aactattttgaagaaacac A/G acatttataacagattgaa	1163
ABCA1	163	5' flanking - (1033-1032)	tgacttaastatttagacat (AT) ggtgtgtaggcctgcattcc	1164
ABCA1	163	5' flanking - (1033-1032)	tgacttaastatttagacat ggtgtgtaggcctgcattcc	1165
ABCA1	164	intron 5 + 8388	ttctgtatgggtgtgtctg C/Δ tgagaatcatgactgggtga	1166
ABCA1	165	intron 5 + 9709	cattttctgtctgaacccc T/Δ caccattcaggcagctgct	1167
ABCA1	166	intron 5 + 13816	tcctacttctctttttt T/Δ catttgctctctccaccac	1168
ABCA1	167	intron 10 + (270-271)	cttttcaggaggagccaaa (G) cgctcattgtctgtctct	1169
ABCA1	167	intron 10 + (270-271)	cttttcaggaggagccaaa cgctcattgtctgtctct	1170
ABCA1	168	intron 20 + (611-612)	tttagcccatctctctcccc (C) gccacccctcatttagggo	1171
ABCA1	168	intron 20 + (611-612)	tttagcccatctctctcccc gccacccctcatttagggo	1172
ABCA1	169	intron 32 + (391-392)	gagtgcttgggtactctct (T) gatggggagctaatgataa	1173
ABCA1	169	intron 32 + (391-392)	gagtgcttgggtactctct gatggggagctaatgataa	1174
ABCA1	170	intron 37 + 847	gctgtatattgtaagtgc C/Δ gttttcaaaagaaagocaa	1175
COMT	1	5' flanking - 1287	cgatgatattccccattct G/A agtccagaataacctagaat	1176
COMT	2	5' flanking - 1217	tgtgagtatgggaaggaaa G/A cttttctgtctgtgtccc	1177
COMT	3	5' flanking - 503	cagggtctccaggaggacga G/A tgtgtctctccattgcto	1178
COMT	4	5' flanking - 425	gagaagttgggaagtctggc C/T agtggggccggtgcctgtg	1179
COMT	5	5' flanking - 277	cccagcccccagtttoocac C/T tgggaaggggactctgtg	1180
COMT	6	intron 1 + 12058	ctggcccatgggaaggggg G/A agggggcccccagggggcca	1181
COMT	7	intron 1 + 12070	aggggggggggggggggg G/A cggggccacagtaaggaggt	1182
COMT	8	intron 1 + 18831	tgtgtatgttctgttaaac C/T agcccttgctcttacatc	1183
COMT	9	intron 2 + 832	cctctcctttggccaccgt G/C actacccccaaactcgggc	1184
COMT	10	intron 3 + 90	ggagaagcgttatcaccac A/G ttccagggggctgggaacc	1185
COMT	11	intron 3 + 425	ccccaaagtggcggttcgg T/G gattcagagaggcagctct	1186
COMT	12	intron 3 + 671	ggctcctctctttgggaga G/A gggggggccgtgcctggg	1187
COMT	13	intron 3 + 876	ctgctctttgggagagtg G/T gggcctgctctgggatcca	1188
COMT	14	intron 5 + 75	tcagcctcagcctctccaa G/C agccaggcattccagtagag	1189
COMT	15	intron 5 + 310	accagacacaggagcagaaa C/T ggcacaggaccaaggagatg	1190
COMT	16	intron 5 + 346	agatgggtggggaggggc G/A ccttgggccagcctgctct	1191
COMT	17	intron 5 + 3023	aaggcagacgcootgctaaa G/A gcttaggcatgtctctct	1192
HNMT	1	5' flanking - 211	cagaggcagatgacagtctt C/T cgttaagattccotgctg	1193
HNMT	2	intron 1 + 5409	aataaactgatataattgg A/G acatttcattgttgccatg	1194
HNMT	3	intron 2 + 2561	caactgtcttggcacaagaa A/G agaaggcctacaagaaaaag	1195
HNMT	4	intron 2 + 2895	caatcagaatgtgaagaaa A/G ctccaagaaaaatttaagtt	1196
HNMT	5	intron 2 + 3977	accaaaactggaagtgtaaa G/A ttatgcatgtatgtcatgt	1197

遺伝子名	No.	存在位置	配列	配列番号
HNMT	6	intron2 + 5296	ttaacatagtgagtttgag T/C cccaggatttttttccct	1198
HNMT	7	intron2 + 13317	caaccctcatgaattcttag C/T tgggatgggtccctataaca	1199
HNMT	8	intron2 + 14682	gtatgatgacaaatgagttc A/Δ ggagagatttaaatcccta	1200
HNMT	9	intron2 + 15406	gtctatgcattcatgcatcc G/A tctaaccagctgtctaccta	1201
HNMT	10	intron2 + 28943	atgtgacttaaaacttcaggt A/G tatcaatctccctgaatgt	1202
HNMT	11	intron4 + 49	cagaagaagacttttcaga A/G tatatataatgaatatct	1203
HNMT	12	intron4 + (1942-1943)	tttgagaaaaatttaaggta (A) tcttctatggcccacttcca	1204
HNMT	12	intron4 + (1942-1943)	tttgagaaaaatttaaggta tcttctatggcccacttcca	1205
HNMT	13	intron4 + 2405	ccctgtgaccaagcagataa G/A ctcatgctttatttagtcca	1206
HNMT	14	intron5 + (80-81)	cctgtgtttgaaagaagott (TT) atatattttgtcttcattat	1207
HNMT	14	intron5 + (80-81)	cctgtgtttgaaagaagott atatattttgtcttcattat	1208
HNMT	15	intron5 + 235	ctttcttttaggaaaaatag T/C ctttgtctctatatatgaa	1209
HNMT	16	intron5 + (702-703)	tactacaggttgatttag (AT) acacagcagactctgtcttc	1210
HNMT	16	intron5 + (702-703)	tactacaggttgatttag acacagcagactctgtcttc	1211
HNMT	17	intron5 + 749	ttcacccagccccatcct T/G aacacatagtctacaaaat	1212
HNMT	18	intron5 + 1101	gtaggcagctattcttgat T/G atattcatcactacacaga	1213
HNMT	19	intron5 + 1137	acagaaaaagtattgtagac G/A gaataaacaattcattgaga	1214
HNMT	20	intron5 + 1348	aaggagcatgaaatagttca C/G aagtaactgagaaactgatta	1215
HNMT	21	intron5 + 1673	caaaagaaaggagtaaaga C/G tcaacaatcagtttagctttt	1216
HNMT	22	intron5 + 2022	attttatttgggttttcta C/T gtctctctctccttaagcta	1217
HNMT	23	intron5 + 2285	tgtcatacttaactcttaaa G/C atccagagtaaatgatggag	1218
HNMT	24	intron5+4159	taccagttgaccagcaacc C/T tcttatagagtattttaa	1219
HNMT	25	intron5 + 4501	aatgatccacaaatcta C/G tcaattgtttcttcaatga	1220
HNMT	26	intron5 + 5251	cacacacacacacacaca C/G caaatggagcagcgaagaca	1221
HNMT	27	intron5 + 5802	gaaaaagaaaactcgtgcta C/T atcatgttgaaaacaaaagt	1222
HNMT	28	intron5 + 6189	tcaattccacottctccta G/C agcatatcctgcagttacct	1223
HNMT	29	intron5 + 6297	gtctgtgtcattctcttag T/A taattgatctctggaactt	1224
HNMT	30	3'flanking + 458	tatgtcactctcaagaact C/T tataagaccaagagtcatt	1225
HNMT	31	3'flanking + 993	ctgaaatgaacactgaacc G/A ttaacatactgatgtac	1226
HNMT	32	3'flanking + 1793	gtggagcacagotttttag G/A ctgtatatttgcattata	1227
GAMT	3	intron5 + 1411	ggtagccttggtccatcccc G/A accagagagcagagtgccc	1228
PNMT	2	intron1 + 35	ctgaggcagcaggggacaaga G/T gtctgtggggagtgaagca	1229
CYP1A1	1	intron 1+1590	ccactcttcaaaaggagta C/T atgtgacagcagctggaaat	1230
CYP1A1	2	exon2+160	gaatccaccaggggcaatgg G/A ctggcctctgattgggcaca	1231
CYP1A2	1	5'flanking-731	gactgggctaggtgtagg G/T cctgagttccgggtttgct	1232
CYP1A2	2	intron1+371	cttccctgtgtcacactaa C/T ctttctctcttgaattg	1233
CYP1A2	3	intron3+44	atagccaggagagccttga G/A acccagatttttttcagt	1234
CYP1A2	4	intron5+81	tcctctctaggaactgttta T/C ataagaaaggagggacct	1235
CYP1A2	5	exon6+181	ctggccatcctgtctacagca A/T ctgagttcagcgtccggcc	1236
CYP1A2	6	exon6+295	cggctgcgcttccatcaa C/T tgaagaagaccaccattc	1237
CYP1B1	1	5'flanking-3669	tgtatcctgtgaagcatcac G/A gttatccttctctgcacatg	1238
CYP1B1	2	5'flanking-3149	tgacagoccttaccaccta G/C ttcctctgatttttgagta	1239
CYP1B1	3	5'flanking-1222	gggggaagcccccogccc G/A agcgcctcgggttccctta	1240
CYP1B1	4	5'flanking-376	ttccgggaagcaagctcaag T/C cgcggagagggagggaggt	1241
CYP1B1	5	5'flanking-265	ctgggacacccgtggcct C/T gattggagtgctgtgatg	1242
CYP1B1	6	intron1+129	tgcccgcagcgtttgcccc G/A attgcaggaaccgttacgg	1243
CYP1B1	7	intron1+379	tgagtgtcagcgttctct C/T tctgtcccagcagtgccac	1244
CYP1B1	8	exon3+(799-800)	agcttctgggagatttttt (T) gagtcaagaacttaagggc	1245
CYP1B1	8	exon3+(799-800)	agcttctgggagatttttt gagtcaagaacttaagggc	1246
CYP1B1	9	exon3+1284	agtatagtggtttccatga G/T ttatcatgaatttaagta	1247
CYP1B1	10	3'flanking+2226	tttcttttttttttttt T/Δ aaaattattcctatttct	1248
CYP1B1	11	3'flanking+(2226-2227)	tttcttttttttttttt (T) aaaattattcctatttct	1249
CYP1B1	11	3'flanking+(2226-2227)	tttcttttttttttttt aaaattattcctatttct	1250
CYP1B1	12	3'flanking+2230	tttttttttttttttaaa A/Δ ttattcctatttcttaca	1251
PEMT	90	intron1 + (297-299)	attgtgtgagactcagagt TGT/Δ ccgtgttagctttggatt	1252
PEMT	91	intron1 + 817	tcatgaagcctgtgaaggcac A/G tctctgccccaaagcagcttc	1253
PEMT	92	intron1 + 830	aaggcacatctctgcccac G/A cagcttctaataccagttct	1254
PEMT	93	intron1 + 1035	gagttctctgaaggagctaa T/C accagttagtgttttgaga	1255
PEMT	94	intron1 + 1573	agtggcagggagagactaac C/T ggtgtgtgaggggtggct	1256
PEMT	95	intron1 + 1759	gatttttcttaagaaagaa A/G gaaagaacatocaaatcc	1257

遺伝子名	No.	存在位置	配列	配列番号
PEMT	96	intron1 + 2768	gcaccttgcgtccacagcc G/A gggccacctccaggattcag	1258
PEMT	97	intron1 + 2785	ggccggggccacctccaggt T/C cagaagatgactccagtagg	1259
PEMT	98	intron2 + 4598	ccgtgggttttttttttt T/Δ ctccattcttgggtgctg	1260
NAT2	21	exon2 + 288	atgttaggagggtatatta C/T atccctccagttacaata	1261
NAT2	22	5'flank - 2053	ctggattgcacacattta T/C ccagggtcaggtttccaac	1262
NAT2	23	5'flank - 1299	gaatcaccagtcggggagt A/G taacagtgaaccaagacac	1263
NAT2	24	5'flank - 1145	ctgtagaacacaaagatatt C/T ggaggcagttgtacatgcc	1264
NAT2	25	5'flank - 1036	cctcccccagagtcgccag T/A tcattgtgcagcatgccaga	1265
NAT2	26	5'flank - 94	aaagatttctaagagattc G/A cagaggcaacctgagccct	1266
NAT2	27	5'flank - 643	atgtttatatatttataaa T/C attaatgaataaaaattt	1267
AADA	1	5'UTR + 29	attaaagtacactattcagg C/T atatcatgtaggttaactt	1268
AADA	2	intron1+138	gctgtggcctttgacaatgt G/A ttacttagaagtgtgttg	1269
AADA	3	intron1+142	tggcctttgacaatgttta C/T ttgaagtgtgtgtttt	1270
AADA	4	intron1+1033	ttccagcagagacacca A/G gtaaaaacacccagctaca	1271
AADA	5	intron1 + 1253	ttttttccctcatatttc T/C gtcgtgctacaatatgta	1272
AADA	6	intron1+1366	ctctgttagccttttaatta A/G ttaattcatttacttta	1273
AADA	7	intron1+1369	tggtagccttttaatt A/C attcattcatttacttacct	1274
AADA	8	intron1+2501	ggttacagaagaatgttg C/A ttggccaaaatgatatgg	1275
AADA	9	intron2+1971	aaatgaggttaagtaggag A/C attttctttttttgtgc	1276
AADA	10	intron2+1988	gagaattttctttttttt A/G tgcaggagaataataacaa	1277
AADA	11	intron2+2341	aggtgcctttttattgtcc C/T atgcagacttaggtatcct	1278
AADA	12	intron2+2546	gtctgacacagaagatcaa T/A ggcaaaatgtgcaagacaaa	1279
AADA	13	intron2+2609	taggaggttactgggaac T/C tgaattccactgagtoatga	1280
AADA	14	intron2+2663	tataaatacaggtttaaatt T/C gtctctogtattttaagta	1281
AADA	15	intron4 + 605	tgtgcagtaaaattattata T/C taagttagtgatgagatca	1282
AADA	16	intron4 + 621	tatatattagtagtgatga G/T atcatgtaatttgagacta	1283
AADA	17	intron4 + 679	ttagagctcagcgaattc A/G tataatcttcgatggtgtat	1284
AADA	18	intron4+1680	gttaaatgtggataaatac C/T acaatttgcaaaatatttg	1285
AADA	19	intron4+1748	atttagaagttctatacatc T/C tttatagtattattacact	1286
AADA	20	intron4+1771	tatagtattattacaccttc G/A aaaaacacaaaatttttt	1287
AADA	21	exon5 + 238	caagtcacatcttcaaat A/G ttaattggagttccctgctc	1288
AADA	22	3'UTR + 121	ttagaatttggttttttta A/G aatgtctagttgaagtcca	1289
NTE	1	5'flanking - 535	cacgatctgtccctcagtc C/T tttlaactctagactttctg	1290
NTE	2	5'flanking - 15	gtaaatcccccgcacaaaac A/G gcagcgccttgcaagccac	1291
NTE	3	5'flanking - 748	agcatggcgcgggggggg G/T gtcggagggtcggggggac	1292
NTE	4	5'flanking - 690	tgaataattaaagggggc T/C gcctgcggagccggcgaa	1293
NTE	5	intron6 + 605	ttctgccatatacttagtg A/G ggggtctacatcaggggtt	1294
NTE	6	intron6 + 748	agcctccagcctctctctc C/T ggggttatctcaggcatct	1295
NTE	7	intron6 + 887	gtgtcgtctctggatccc C/T gtgcgtcatgtagtctacct	1296
NTE	8	intron6 + 1882	tggcctcaagcaatctccc G/A cctcggcctccaaagtgt	1297
NTE	9	intron6 + 2222	gaatttttatgagaacaga G/A agactgtatctcgggtcttc	1298
NTE	10	intron12 + 188	tatctgttaccagggaagt C/G tggcctcgtcccaaggcc	1299
NTE	11	intron13 + 69	atccagggtccacgcctgcc C/T gtcttgattgttttaactg	1300
NTE	12	intron14 + 8	agccccgcctcggtaagg C/T tgggacctgcccgtgtgtg	1301
NTE	13	intron16 - 113	gccaccgcgcctcgcctt T/C atattttcttaacccttc	1302
NTE	14	intron21 + 34	agggcggccggccagagc A/G tgcgtggagatgtagtccg	1303
NTE	15	intron21 + 128	gaagaatcgtgcccctgag G/A gtttcaaacctaagtagga	1304
NTE	16	intron21 + 151	ttcaaacctaagtaggacc C/G aggtgcagagcattctggg	1305
NTE	17	intron21 + 651	ccactgtactccagccggga C/T gacagagctagaacctgtt	1306
NTE	18	intron21 + 737	tggaaaatagtctggatt G/T ttgttaggactctgggcac	1307
NTE	19	intron21 + 1752	acagctgtctaggcttta G/C tggagaactgggaagcaac	1308
NTE	20	intron21 + 1788	gaagcaacagctgggtcaaa A/Δ gtagcttttttttttggg	1309
NTE	21	intron21 + 1907	cactgcaacctctgcctccc A/G ggttcaagtattctcctgc	1310
NTE	22	intron21 + 2065	ctgcctcgttttatgtcag G/T tccccattagacagaggaa	1311
NTE	23	intron21 + 2336	agtctggggcacaggagca G/A gaatttcagataaggaggaa	1312
NTE	24	intron23 + 41	tgggggggltggtgggg G/C ctggagcctcaaatcttctc	1313
NTE	25	intron23 + 71	caaatctttcagacctgag T/C tcaagttctcggcttcaac	1314
NTE	26	intron23 + 81	cagacctgagtcaagtct C/T ggcttccaaacacggagcct	1315
NTE	27	intron24 + 150	gtggggcggtggtgacctc A/G gccgtcgtattccgagct	1316
NTE	28	intron29 + 37	gcctgcagcaaccgctgacg T/C cagctgggttgggggag	1317

遺伝子名	No.	存在位置	配列	配列番号
NTE	29	intron29 + 370	cgccccaggtcagcgagccc G/A tggggccggctggccctccg	1318
NTE	30	intron30 + 56	acctcccgccacacacacac G/A cacacgcgtggccacacaca	1319
NTE	31	intron30 + 358	aaaaatacaaaaaattaacc A/G ggctgggggtgtgcctgt	1320
NTE	32	intron30 + 372	taaccaggctggggggg T/C gccgtgaatcccagctactc	1321
NTE	33	intron30 + 430	aaatcactgaacctggag G/T tggagggtgcagtgagctga	1322
NTE	34	intron30 + 655	gtgtgcacaccagctatata T/C gcaaatgctttctcagg	1323
NTE	35	intron30 + 659	gcacaccagctatatatgca A/C atgctttctcaggggcag	1324
NTE	36	intron30 + 760	tgaatatgggcatgttgcaa C/T gcattgccagctgtcccggt	1325
NTE	37	intron30 + 835	gcacacacgtagatggatg T/C ggcacctgtgaccgagtaa	1326
NTE	38	intron31 + 40	tgggtcctcataggtgggc T/C ggctaagctttgctactaa	1327
NTE	39	intron31 + 41	gggtccctcataggtgggt G/A gctaagctttgctactaaa	1328
NTE	40	intron31 + 1329	gtctgtcaaggcaggacag G/A ggtgtgtggcgagtgatgc	1329
NTE	41	intron35 + 31	aatggcttctgtctgtt G/A gctggggaccacacctgt	1330
DDOST	8	intron2 + 1299	atctctgtatgaactggctt C/T ggtgcagtaactgtgtttg	1331
DDOST	9	intron2 + 1581	gatactgttgggggaaa T/C gacagagagtgtaaacagt	1332
DDOST	10	intron2 + 2822	gtttctcaacaggtgcattc T/G tgacgtttcagactgataa	1333
DDOST	11	intron2 + 3392	cageaggctggaggcctgc C/T gcgcctccctctgttctgc	1334
DDOST	12	intron5 + 495	attgcttgaaccaggaggc G/A gaggtgcagtgagccaagg	1335
DDOST	13	intron6 + 226	ggaactgctgggtcacagc C/T tctgtttgtcccagtatcc	1336
DDOST	14	intron8 + 303	aagagaaatgacttagg A/T tgattttaggcaagaga	1337
DDOST	15	3'flanking + 40	cacagcgtggagacgggca G/A ggagggggttattaggatt	1338
MRP2	1	exon 1 + 77	catattaatagaagagtctt C/T gtccagacgcagtcaggga	1339
MRP2	2	intron2+192	atcaaatgctgtttgtatt T/G gcataagaatggtgactctt	1340
MRP2	3	intron 1 + 413	gataagttctagaactggca A/C ctaatgatatggactagaag	1341
MRP2	4	intron2+3639	gtcatatccaccccaaat C/A gaccocaataggtacaatgaa	1342
MRP2	5	intron2+3989	agttatgaaccgatttttc C/T gggactggtgttctagtct	1343
MRP2	6	intron2+4078	aggtttccagatgtgtccc T/C aggcattcctggtgtagga	1344
MRP2	7	intron2+4171	cttattcttggtcagttgg C/T ttctaccacactcttagett	1345
MRP2	8	intron 2 + 5373	gttaagagatgtgaactca A/G aatttttatcacagtgcaa	1346
MRP2	9	intron2+4436	ggactagtgaagaattaga C/G ctttctgaataaatagatc	1347
MRP2	10	intron 2 + 3930	aaaactggcaggagaatttc A/G ctggagctgcagtcaggact	1348
MRP2	11	intron 2 + 4257	gggtattggaagtcttgc G/A gctgctggaggctggggt	1349
MRP2	12	intron 3 + 772	ggtataaggcaagattttt A/T aaaaaattaattgcttaac	1350
MRP2	13	intron 7 + 1658	ggactcttaccagcttagtt G/T cctggttttctaactcaaaa	1351
MRP2	14	exon 10 + 40	tggccagggaaggagtacac G/A ttggagaacagtgaaacctg	1352
MRP2	15	intron 11 + 1672	aacttttaagtottaagac T/A ggaaggcctgtgtcctaggc	1353
MRP2	16	intron 12 + 148	ccctctcacccgcccatgcc A/G ctttctccttctgtacct	1354
MRP2	17	intron 2 + 1020	agtgcgtgattacaagcct G/C agccacctgcacagcctctg	1355
MRP2	18	intron 2 + 5227	taccataatttatgttctt A/G tatgacatgaatttcattgg	1356
MRP2	19	intron 2 + 5373	gttaaggatgtgaactca A/G aatttttatcacagtgaaa	1357
MRP2	20	intron 2 + 5538	ttaatgagggttaagcacatg G/T tcatatgtttaaagccttt	1358
MRP2	21	intron 13 + 180	catgagttttctgagcccca G/C ttatatcaactataaaatga	1359
MRP2	22	intron 13 + 1497	gtgcagggtcccccctgatgc T/C atagccagttcctctttaga	1360
MRP2	23	intron 15 + 169	atgagctgaagcaagggtt T/C tcagcccttcccctgataa	1361
MRP2	24	intron 15 + 949	ttccagggtgacacattagt A/G cctaatttgggaatgttaa	1362
MRP2	25	intron 15 + 984	tgttaactgtatccaatccc A/C ttagtgaagaaggagggtc	1363
MRP2	26	intron 16 + 4059	cctcctgatgcacagttatt C/T aaatttaagctccatttett	1364
MRP2	27	intron 19 + 10899	atgtatggagtatttatgga G/A taaagtattccatgctgat	1365
MRP2	28	exon 22 + 51	ccagcaataggatttttc G/A atattcttcacatccttgc	1366
MRP2	29	intron23+56	tatactgaggtatcttctga C/T agggaggaaatttatgtcc	1367
MRP2	30	intron 23 + 734	tgagccaactactgtactag G/A cactggggcactcaatgaat	1368
MRP2	31	intron 23 + 801	atggccagaccacaactcac T/G gattttttagtgtatctgag	1369
MRP2	32	intron 27 + 124	gggtccctaaggtttccttt C/G ctctaactcaaggacctaa	1370
MRP2	33	exon 28 + 52	cagatggccagcaagggc A/C agatccagtttaacaactac	1371
MRP2	34	exon 28 + 84	aacaactaccagtgccgta C/T cgacctgagctggatctggt	1372
MRP2	35	exon 28 + 129	agagggatcactgtgacat C/T ggtagcatggagaaggtagg	1373
MRP2	36	intron 29 + 154	ttcccttaggtggacacgtc A/G ttccagacctttgaaatgt	1374
MRP2	37	intron 30 + 91	gtgttaggtgatgctggca T/C agaattttcatccagctctg	1375
MRP2	38	intron 31 + 170	gocaaaattttcatcagc G/A aatgaasacgaacaaggta	1376
MRP2	39	intron 26 + 154	ctggctccatcttttaccac T/C ggacgtattccttactcttc	1377

遺伝子名	No.	存在位置	配列	配列番号
MRP2	40	3'-flanking + 739	gtgaattttattataagct C/T gttctccttaaaactttatc	1378
MRP2	41	intron 3 + 1145	acatcccttccccctcagtc C/T tcggttagtgccagttattct	1379
MRP2	42	intron23+432	tggcagtagagcagggtgag G/A aggattattctgcagaggaa	1380
ABCB1	1	5'flanking-196	gctttggagccatagtcag T/C actcaaaattattttatct	1381
ABCB1	2	5'flanking-18	tactctttacctgtgaagag T/C agaaccatgaagaaatctact	1382
ABCB1	3	intron1+71660	cttgctggaggaaagggtgct A/C gaaaatatccaaatccaag	1383
ABCB1	4	intron1+80091	gaaataatattcaagttctg A/C aataatattcatgacctatag	1384
ABCB1	5	intron1+103126	gatatgaatcagaattcatc T/C gtgtctcaagaaagggtcat	1385
ABCB1	6	intron1+103148	tgctcaagaaaagggtcatg C/T gataaattaagttctgctag	1386
ABCB1	7	intron1+108428	aattaatttatcatcatctg A/G tcaccatttcacacaactca	1387
ABCB1	8	intron1+112042	cataagtgaatgtcccca A/G tgattcagctgatgcgctt	1388
ABCB1	9	intron2+491	gctctctggcttcgacgggg G/Δ actagaggtagtctcacct	1389
ABCB1	10	intron4+36	attaactattcaaaatact C/T ggaatttgacatctcctta	1390
ABCB1	11	intron5+1596	ttagctctcttactgcttca T/C agtgaagaatcaaaatatt	1391
ABCB1	12	intron8+1789	aaacactctgaattataaac C/T gctcctggaaccacagctoa	1392
ABCB1	13	intron14+24	agttgtccttgccctttggc T/C ttctagagggtcaaaaaata	1393
ABCB1	14	intron14+81	tgcaggaagttaggaaacta C/T tataaatcggaggaaggaa	1394
ABCB1	15	intron15+38	caaaaccaactgatttataa A/G oataagaaccttactact	1395
ABCB1	16	intron17+73	gtttggtggctagggctoc A/G gtaggagtgggaacaagaga	1396
ABCB1	17	intron18+564	caacagtaaaagttaaatct G/A aaaggaatgctctctgtta	1397
ABCB1	18	intron18+2062	ttccctgaggaatggttat C/T ctctgttctccttgagtoa	1398
ABCB1	19	intron18+2293	ccacatcaggttttcccccag A/G cccctggggaaggttgaaa	1399
ABCB1	20	intron20+557	aaaaccctaaocttgacac G/A tgtgaatttttctctggga	1400
ABCB1	21	intron21+24	ogtgccctcttttactggt G/A ttgtcttatttgccatt	1401
ABCB1	22	intron21+2725	ctgacctgttttggctgac A/G ggttttagttcctccctca	1402
ABCB1	23	intron21+4725	tcttggtattaaagatcca A/G agagataggaaatgttaatt	1403
ABCB1	24	intron22+8507	tgcacttaggaaaaaaacaa T/C atggaatgtgtaaaatata	1404
ABCB1	25	intron22+8537	tgtaaaatactcttttttt T/A aaaaaaaggacacatttat	1405
ABCB1	26	intron22+8565	aggaaactttattatgaat T/C atgacagactattacatt	1406
ABCB1	27	intron22+8952	caacttgatttcaggtttg G/A caaagtactggcctgtacca	1407
ABCB1	28	intron22+9520	caccaacaaatctcttttc A/G cagtggtgggcatctggt	1408
ABCB1	29	intron22+9836	agactctgaactagacatga G/T ggcagggaagagagactt	1409
ABCB1	30	intron24+377	taaaatacagatgtattga C/A taagtctcgaagcctttgg	1410
ABCB1	31	intron24+1493	ggggagggtgcacggcaca A/Δ catggagagctggactgat	1411
ABCB1	32	intron24+1495	ggagggttcacagcacaac A/T tggagagctggactgtatc	1412
ABCB1	33	intron25+342	tgcagcctgatctcttggg C/T tcaagcgtcctcctgctc	1413
ABCB1	34	intron26+134	ottggataaagtctgagagc C/G taaatattgtctccaagtgg	1414
ABCB1	35	intron26+1272	gtccttcaattttgtgtga A/G cttaaaaacaggactctaaa	1415
ABCB1	36	intron26+1394	tettaagtgtgtgttaag A/G ttgtgtataatgaattga	1416
ABCB1	37	intron26+(1987-1988)	aagggtggaagagtgaag (AAAG) gaggtatttgcctccagac	1417
ABCB1	37	intron26+(1987-1988)	aagggtggaagagtgaag gaggtatttgcctccagac	1418
ABCB1	38	intron27+59	gcagccctctctggcctatag G/T ttgattataagggtcctgt	1419
ABCB1	39	intron27+80	ttgattataaagggtcctgt T/C tcccagaagtgaagagaaat	1420
ABCB3	1	intron3+8	tctcctttggcaggtagtg G/A tggcagctgggtccatttg	1421
ABCB3	2	intron4+104	cttcacccgtatgccaggac C/T tgggagctttttctctgt	1422
ABCB3	3	intron10+219	gcagcagtggtgctccctcc A/G tgggcagcccgctcaggtcc	1423
ABCB3	4	intron11+(317-319)	atgggtcccaggtgagtg TG/Δ tccatctcattcctgtcttt	1424
ABCB3	5	exon12+19	agctgcaggactggaattcc T/C gtgggagatgcacagtgctg	1425
ABCB3	6	exon12+(356-357)	agtggtgggtgggtgggtg GG/TGGTGGGGTGGGA ggctg	1426
ABCB7	1	intron1+220	ccggggcaggaggttctggg C/A agaggacacctggagcgtg	1427
ABCB7	2	intron1+480	agtttaactccttctgtgaca G/A gcgtcttcttgataggcca	1428
ABCB7	3	intron1+(512-513)	getaggccaaaaccgtaact AT/Δ ctttccaaaacatagaccgc	1429
ABCB7	4	intron1+1690	agttctccaataaggcagat G/A aaglttaagataaaatttga	1430
ABCB7	5	intron1+5309	aattaatacatatttctg G/A tattgtgtcagtttatct	1431
ABCB7	6	intron1-11274	tgcttctttcaagccagcc A/G gctttaaaaaagtttagct	1432
ABCB7	7	intron1-11085	caggttttcagggtctatgt A/G gacctgaagaaaaatgagag	1433
ABCB7	8	intron1-10037	attctacttttcaacttct T/C ttattacattatctcatct	1434
ABCB7	9	intron1-21	ccactctgaaactccccct G/A cttttttccttgctcagcag	1435
ABCB7	10	intron3+(135-136)	ttctotaaatgaaaaaaaa (A) catatttaattgacctagtt	1436

遺伝子名	No.	存在位置	配列	配列番号
ABCB7	10	intron3+(135-136)	ttctctaatgaaaaaaaa catattaattgaccatagtt	1437
ABCB7	11	intron3+333	aaaacaatttgggtgtgc G/A tttgotttaaggttatgtt	1438
ABCB7	12	intron12+524	taaccactctgcctcagta C/T gaaacacagtgccgaacca	1439
ABCB7	13	intron13+1543	atcctgtgaggtgggaagc G/A tatggttagcataaataaa	1440
ABCB7	14	intron13+2400	tgttaacctactgctoaatt C/G toatttctccacctgctat	1441
ABCB7	15	intron15+2201	ctccttctaacccttagcaa G/C agtctggagatttactatc	1442
ABCB8	1	5'flanking-2272	ggcttaggcctaagggtga T/C gttggggccagtaeccctga	1443
ABCB8	2	5'flanking-2070	agctatgaaaaaagacccot G/A tcttcttagaggtagcaaaa	1444
ABCB8	3	intron1+25	aaacggaaaaaacctactcag A/C gcgggcccattgaccgccgg	1445
ABCB8	4	exon2+308	tgcctgtctctggggtagcc G/A tctggttgaggtttcccca	1446
ABCB8	5	intron2+334	cccccaattaaacatttgt C/G ooctctgtctcccaattcca	1447
ABCB8	6	intron4+12	cctctctccgtactgcccagc C/T gcagggtgacagattgggt	1448
ABCB8	7	intron5+547	agttcatagcattctcgtc G/A gccccctcaggcctgtgtct	1449
ABCB8	8	exon7+57	ggcaatgtgcggactgtgag A/T gccttgcctatggagcaacg	1450
ABCB8	9	intron9+1231	tttccgagctgcattgaca C/T cctcgtgctcccccgtttctg	1451
ABCB8	10	intron9+2164	cctcttgagggtcctctag C/T gctgctatgtggagattct	1452
ABCB8	11	intron9+2645	ttcctgctgtgtcctcccc C/Δ ggctgcotttagcaagtgt	1453
ABCB8	12	intron9+2646	tcctgctgtgtcctcccc G/A gctgcttttagcaagtgtg	1454
ABCB8	13	intron9+3229	caggcccgagcaggaggtcc G/A tgggtcagctgggtccctt	1455
ABCB8	14	intron12+(113-114)	tcctccactgccacaaggag (GG) ccttcttctctgggacaac	1456
ABCB8	14	intron12+(113-114)	tcctccactgccacaaggag ccttcttctctgggacaac	1457
ABCB8	15	intron13+128	tgtctctggggagccctgag C/T gtcttcacatgtctcagct	1458
ABCB8	16	intron13+305	ctccaggtctagagaagcct A/G tagtgaggtgctgagctgc	1459
ABCB8	17	intron14+135	acagtgtgtcagggaagc C/G agaaccacagccaaaggga	1460
ABCB8	18	intron14+159	accacagccaaaggagacag A/T gctgtgtgtgggacag	1461
ABCB8	19	intron15+747	gttgagccttgggtctgt A/G gggggacagagggaatcat	1462
ABCB8	20	3'flanking+333	cctatcccttgggtcaccct G/A gggccacagctcccatctt	1463
ABCB8	21	3'flanking+1168	cccttctcagggtgtgat G/A cagtacattgatggagcagc	1464
ABCB8	22	3'flanking+(1719-1721)	tagaccgcagagccgcgcc GTC/Δ ttctaacctcgcctcggcc	1465
ABCB9	1	intron1+ 69	agggtgcaaggccagacagc G/C gttggggcgctctggcac	1466
ABCB9	2	intron1+8873	tgggccagcagctggggcc T/C ggaactacctcaaggcttc	1467
ABCB9	3	intron1+8940	accagctcagcctgccagc G/A tgcacacggcaccagctgg	1468
ABCB9	4	intron1+11410	agatccaagggtccagagg T/C tggatgtgacccctcgtgc	1469
ABCB9	5	intron1+12863	gggaagccagatgccaca G/A gctctgtgacttcaactcca	1470
ABCB9	6	intron1+19731	gccaaagtgtcaagatgagc G/A aggggagggcctgacgagg	1471
ABCB9	7	intron1+29649	cagaatccagatgccgtaa T/C gttgttaagaagcctgcaca	1472
ABCB9	8	intron1+31793	ggccagggggggaggggtac C/T ggcagaccgggtggcaaaa	1473
ABCB9	9	intron1+37537	agagtcacaggttgggtg C/A cccgggaaggtggcatcta	1474
ABCB9	10	intron1+38293	taccagcctgtgctttcag G/A gaccatgtgacctgtcaact	1475
ABCB9	11	intron1+44661	cccgggtgctgcttctac A/G gcaggattgocgtcctgcag	1476
ABCB9	12	intron1+49576	aaagtggcccggtggtgt C/T cctgaagccctaagcacc	1477
ABCB9	13	intron1+64669	ccacagacaagccggtagc C/A caccctgcagctcaacacac	1478
ABCB9	14	exon2+448	cctgttttgggcccctgttc G/A tgtgagctacatttcacto	1479
ABCB9	15	intron7+3364	ggtaccaggagtcgggtatc A/G gttggacaggaacgcgtgc	1480
ABCB9	16	intron11+113	gggcccaggagctctccca G/T actatcagcctcctggctg	1481
ABCB9	17	exon12+370	cccaggcctgcagcactgaa A/G gacgacctgccatgccat	1482
ABCB10	1	5'flanking-424	tcgctgtcgcgctccgcc C/T ggtctgcggcgtgagaaag	1483
ABCB10	2	exon1+491	acaaagggtgttgcgcctc G/T cagcggccgactcccgag	1484
ABCB10	3	intron1+37	ccacttccctccggcgccc T/G ctcttctccacacggggg	1485
ABCB10	4	intron1+217	actcgtttgcagatttaca C/T ttgttttctgttgacaac	1486
ABCB10	5	intron1+405	gggtttatactttttttt T/Δ aaccsaaacacattattg	1487
ABCB10	6	exon3+185	agggccggggccaggcttc C/T gtaggcacatgatatggt	1488
ABCB10	7	intron6+1269	caaatccaaactgtgctt C/G cacagaatgggttgaaaaac	1489
ABCB10	8	intron9+632	ccccactccacttgggtgag G/A gcaggtgagtgatgggt	1490
ABCB10	9	intron10+2373	tacctcaggcactcagaca G/C cctcaccatcagaggctca	1491
ABCB10	10	intron11+108	tccttttctgtttttttt T/G ttttttttttggagtg	1492
ABCB10	11	intron11+2379	cattggtttttgtgtatc T/A gttgttgcatccatcatca	1493
ABCB11	1	5'flanking-(2596-2595)	tgtgttttagagctttctct (TT) gagacatttttctaagggt	1494
ABCB11	1	5'flanking-(2596-2595)	tgtgttttagagctttctct gagacatttttctaagggt	1495
ABCB11	2	5'flanking-1746	agctgaagtgaattagccc G/A atcaactcagtactcacact	1496



遺伝子名	No.	存在位置	配列	配列番号
ABCB11	3	5'flanking-(326-314)	agggggaaagtttaagga (T)9-12 gtctgttatgttttaagt	1497
ABCB11	4	5'flanking-135	agagggtttcccaagcacac T/C ctgtgttgggttatgtct	1498
ABCB11	5	intron1+511	aatatagatgcaaaaaaa A/Δ tgaagcttgatgcattgtt	1499
ABCB11	6	intron1+581	aatttcagtttttaggtcac C/T caagccagtgaggatcacat	1500
ABCB11	7	intron1+(1938-1951)	aaagacgttttaagggcttt (A)10-13 gaaagaaaagaaactgttg	1501
ABCB11	8	intron1+4517	ggtttcccaacatctcatct G/A ataaaaaaataattgccca	1502
ABCB11	9	intron1+5651	aaagagaatagggttagtga T/C tagtattcctgtgcttaagt	1503
ABCB11	10	intron1+(12200-12201)	aagagatggtctctagcccc GT/Δ gtttgatttgggcacttac	1504
ABCB11	11	intron1+13023	glttggctactttgattaaa G/A aagaagaagagataataat	1505
ABCB11	12	intron2+739	cotgcatctattctgacct C/T actgggaaaacagtatgtg	1508
ABCB11	13	intron2+(921-922)	tatttttagttcaaaaagt (CAGATCTTCTTCAGCT AATTAGAAATGT) tgctgtccatttgatattca	1507
ABCB11	13	intron2+(921-922)	tatttttagttcaaaaagt tgctg tccatttgatattca	1508
ABCB11	14	intron3+844	agccacacgtttcttttgc G/A tgggaagtttaaaaaatggg	1509
ABCB11	15	intron3+2231	agtgaacctgagattgagct A/G tactgaaatctctagaagag	1510
ABCB11	16	intron3+2406	aaagggtggtctttaaatcc T/C tatgtttttctcatcaggtt	1511
ABCB11	17	exon4+10	tttctcatcaggttacaaga T/C gagaagaaggtgatggct	1512
ABCB11	18	intron4+434	acaatttagtatttttca A/G tgcaccacacagtttatcta	1513
ABCB11	19	intron4+518	gtagatgagtagctaaaaac G/T aaagtacgtcctgaaataa	1514
ABCB11	20	exon5+120	ggcacaatgacagatgtttt T/C attgactacgacgttgagtt	1515
ABCB11	21	intron5+320	gggggtgaccatgaattt T/C acttgagtatcatctccaag	1516
ABCB11	22	intron5+16076	agaagaggttaacagtaagcc T/G cctgatttacagaaacacac	1517
ABCB11	23	intron6+303	atttcaggtgtgtttgtg G/C gggcaggtgagtagctgaa	1518
ABCB11	24	intron7+1141	aaaggattcagcaggcatga A/G gaaagaaaagcgtttgcaaga	1519
ABCB11	25	intron8+2463	ccattggcctaataagcaatga A/C ctatgacatggtctaaactta	1520
ABCB11	26	intron8+2677	tcaatgatgttacagtgaga A/C tctaatattgtattaaaccc	1521
ABCB11	27	intron8+2699	ctaattgtatttaaaccca T/A gccacatgttaaatgaatct	1522
ABCB11	28	exon9+24	gtgtccaagtttaaggacta T/C gagctgaaggcctatgccaa	1523
ABCB11	29	intron9+108	caacctgtgtctggcctcc A/G gagggaagtactgttccaaga	1524
ABCB11	30	intron10+2475	taattatccaaaccacgga C/A ttatttcattaagacatg	1525
ABCB11	31	intron10+2478	tcaattcaaacccacgactt T/A atttcattaagaacatgata	1526
ABCB11	32	intron10+2711	tttacagattggaaaagcca C/T tgaagtattgcaggtccaga	1527
ABCB11	33	intron10+3539	agtgaactgttaattagtca C/G ttgtgcacagagaaaaaatg	1528
ABCB11	34	intron10+3623	tgcagaaggttgttttcca T/C gaccttccgtgatttcagaa	1529
ABCB11	35	intron10+3661	gaattcatttaaaaaataa A/T caacataatggagcgtgacat	1530
ABCB11	36	intron10+5100	gggccactcttttgcttggc A/G atagactgtggccaatgaaa	1531
ABCB11	37	intron10+5292	gctatttgttaggaacatct G/A ggcagatcaggttagccttc	1532
ABCB11	38	intron10+5912	gagtaattatcagtaaaaa A/Δ taagtggttttttaaatca	1533
ABCB11	39	intron12+116	tgtttccagtaattagggaat G/A gagggtgtctttctgaaag	1534
ABCB11	40	intron12+326	gataaatgacaaggcaatta G/C aacaatcagggaagcaaggt	1535
ABCB11	41	intron12+335	caaggcaatttaacacatca A/G gaagcacaggttcttccaa	1536
ABCB11	42	intron12+2572	cctcatccttgccaatgttt C/T ctttactggtttttgatgg	1537
ABCB11	43	exon13+23	tctaaatgacccacacatgg T/C caattaaccaggggaatga	1538
ABCB11	44	intron13+70	atggcagtagtattgatcaaa C/T agaaaggtgtagcatacatt	1539
ABCB11	45	intron13+(1578-1579)	ttattggcctctatttttc (C) tgccattggtcaagtatga	1540
ABCB11	45	intron13+(1578-1579)	ttattggcctctatttttc tgccattggtcaagtatga	1541
ABCB11	46	intron14+32	catcatttcctgggagaaac C/T aagaggtcagagaaggaaa	1542
ABCB11	47	intron14+80	cacaattatcacattttct C/T tctgtatgttcccaagtcatt	1543
ABCB11	48	intron14+439	tattgtgtcaaaacaaatc A/G ttgtatctctccattctaag	1544
ABCB11	49	intron14+(1262-1263)	cagcctttgcattatattt (T) gctgtgtgtctaacaggag	1545
ABCB11	49	intron14+(1262-1263)	cagcctttgcattatattt gctgtgtgtctaacaggag	1546
ABCB11	50	intron14+1283	gctgtgtgtctaacaggag A/C aaagagacacggattgtct	1547
ABCB11	51	intron14+1339	tgagatagatatttaggacc G/A tgaccaatttttttttgaat	1548
ABCB11	52	intron14+1359	gtgaccaattttttttttgg T/G tgaaaaatcttatttgaagt	1549
ABCB11	53	intron14+1460	tattgattagacaataaccc G/A tctgggaagggaattttct	1550
ABCB11	54	intron15+370	ccttttctaagtctgcaaca G/A cctatttaagaatatccca	1551
ABCB11	55	intron16+(550-559)	aaagtttagttttctatca (T)9-12 gctactctgatggactct	1552
ABCB11	56	intron17+188	ttctctcccaattcatgg T/G tttttgtaggtttctctc	1553
ABCB11	57	intron17+194	tcccaattcatgggtttt T/G gtagcttctcatcttctg	1554

遺伝子名	No.	存在位置	配列	配列番号
ABCB11	58	intron17+(197-198)	caattcatgggtttttggtt (T) agcttctcatcttcttggg	1555
ABCB11	58	intron17+(197-198)	caattcatgggtttttggtt agcttctcatcttcttggg	1556
ABCB11	59	intron17+(289-296)	ttagaaggagggaactctttt (A)7G(A)4 tctgtgttagtctctct	1557
ABCB11	59	intron17+(289-296)	ttagaaggagggaactctttt (A)12 tctgtgttagtctctct	1558
ABCB11	59	intron17+(289-296)	ttagaaggagggaactctttt (A)10 tctgtgttagtctctct	1559
ABCB11	60	intron17+1070	tcagacttgggttttctat C/T ttctcttggagaacaagt	1560
ABCB11	61	intron17+1651	tgtaaaatactcattgta T/C atgtgacggattttcttg	1561
ABCB11	62	intron17+2226	ccttaagtctctctcatca T/A gcacctgttctcaccagct	1562
ABCB11	63	intron17+2979	ctctctctctctctcagc T/Δ ctactatttcaactgttgct	1563
ABCB11	64	intron17+3288	aatcccatatctctaccta T/G ccatctcatccatgaatctt	1564
ABCB11	65	intron17+3289	atcccatatctctaccta C/T catctcatccatgaatctt	1565
ABCB11	66	intron18+97	aatatgagttttctaggtat A/G tatctagcagtggttcaagt	1566
ABCB11	67	intron18+98	atatgagttttctaggtata T/C atctagcagtggttcaagt	1567
ABCB11	68	intron18+892	ctctgaaggtagtgatata C/T ctattttgtgttgatcaa	1568
ABCB11	69	intron18+2681	atgtatgagatcaagtcagg A/G tcaaatattagacaccata	1569
ABCB11	70	intron18+3780	ggaccaatctgtgggcaat C/G gttccagaaaatgctggtat	1570
ABCB11	71	intron18+5741	ctcacoggtataatacaac C/T gtagcaagggtttttttt	1571
ABCB11	72	intron18+(5882-5883)	tgcgtattctctcagttcag (C) tttttattcaagccacgca	1572
ABCB11	72	intron18+(5882-5883)	tgcgtattctctcagttcag tttttattcaagccacgca	1573
ABCB11	73	intron18+10022	tgcgtattctctcagttcag A/Δ gagattcaactataattgct	1574
ABCB11	74	intron21+322	caagattcaactctgcccc C/Δ aggggtgagtgacagggc	1575
ABCB11	75	intron22+257	ctgttcaatttctctcga T/C agtgattcattccacattcc	1576
ABCB11	76	intron22+552	taattaatattctctcgt G/C ggggtaaatgagggatgta	1577
ABCB11	77	intron22+569	ttgggggtaaatgaggat G/A gtagcataaacacttctcaa	1578
ABCB11	78	3'flanking+243	aaacaccacagatgacata G/A aactaacggcggcaggaatc	1579
CYP4B1	1	5'flanking-333	gaaacattcacagtgtgtt A/T tgagaagacagtgttatta	1580
CYP4B1	2	5'flanking-18	gagcagctgaaggcaggtca G/T atgaaggctaggtggctgga	1581
CYP4B1	3	intron1+341	tccaaaacctctgtagta C/T atagaagtgaggaatccatt	1582
CYP4B1	4	intron1+542	cctatgggtggtcaggagc C/T gtgacacctccaggttca	1583
CYP4B1	5	intron1+2856	gaggactttgcacatagtag G/A tgctcagctatatgttggc	1584
CYP4B1	6	intron1+6086	tttgaatctaaagactgg G/T cagctgtagtgtgtgac	1585
CYP4B1	7	intron1+6598	ttttgggtgtggggaggg G/A cccatagtgggagacagct	1586
CYP4B1	8	intron1+6660	acctaagggtgtccactctg A/G agggagcagctcctagggg	1587
CYP4B1	9	intron1+7242	ccctggtctcccttaactca T/C gctggactgttcccttgg	1588
CYP4B1	10	intron2+107	gcctgtgtactaagtctg C/G agctgaggttcccacctac	1589
CYP4B1	11	intron3+361	atgggtgtgtgttaggacca C/T ggtgtgtcaccagaggtgt	1590
CYP4B1	12	intron4-492	aaaggctttcactctaaaa C/A gtgtctctcatttctgt	1591
CYP4B1	13	intron4-315	ggattacttacatatacacc A/G tggggggagctcaccacct	1592
CYP4B1	14	intron4-157	ctaccaccctatctctgata T/C tccagcaggtgagggcag	1593
CYP4B1	15	exon5+22	acaagtgggaagagaagct C/T agggggtaagtcctttgac	1594
CYP4B1	16	intron5+125	cccagggagccttagcttgc G/A gggagacaggacctgtcat	1595
CYP4B1	17	intron5+(287-289)	tgtctaagccaatccctct CCT/Δ accctctgttagcagggac	1596
CYP4B1	18	intron6+54	gcctgggttctctctctg C/T cctctatgccccctccat	1597
CYP4B1	19	intron7+(99-100)	agctcttaagcatttcccc (TC) ttctctcagcaataatacc	1598
CYP4B1	19	intron7+(99-100)	agctcttaagcatttcccc ttctctcagcaataataacc	1599
CYP4B1	20	exon8+114	tcctgtttctctactgcat G/A gccctgtacctgtgacacca	1600
CYP4B1	21	exon8+139	tgtacctgtgacaccagcat C/T gttgtagagaggaggtccgo	1601
CYP4B1	22	intron8+247	agaaagttgtcaaccagagg C/T tgatattttgtgtctact	1602
CYP4B1	23	intron8+366	tgtgggtgtgacagagctg A/G gacagctgggagagccagtt	1603
CYP4B1	24	intron8+650	cctttgtgtgtgtcagaca C/A cctgctttctctctggct	1604
CYP4B1	25	intron8+844	tcatatgtgagaatcccc C/A ccaagggtatccagacaca	1605
CYP4B1	26	intron8+1767	tccattccaagaatgttct G/T gttgtgtgtgtgagggat	1606
CYP4B1	27	exon9+53	tgtcatcaaggagagctt C/T gctctcaccacctgtgccc	1607
CYP4B1	28	intron9+652	agtcggatgtgtcatgaac G/T ctctgtcactgtcagtgct	1608
CYP4B1	29	intron9+774	ccgtgtcaccacotctgtt C/T tggccacaggaagcctgac	1609
CYP4B1	30	intron10+33	tgggtgtgagatcagacag G/T gttggggactgtggaggtca	1610
CYP4B1	31	exon12+224	ccagatggctcaggtgtga C/A ctccctgggaaccacctcc	1611
CYP4B1	32	exon12+270	ctgggtgtggagaggtgg G/A cccctgccttcaggagct	1612
CYP4B1	33	3'flanking+129	tctgtgtctcagctcagct G/A gtgtccaggtcattcaggt	1613
CYP27A1	1	intron1+295	aggaggagctgtcttggga A/G gagagtgccagaggcaaatg	1614



遺伝子名	No.	存在位置	配列	配列番号
CYP27A1	2	intron1+17503	cagtcataaagcctctgat C/T ctcottagagaaggaggac	1615
CYP4F2	1	intron1+(145-146)	ccaagcccccggcaaccca CA/Δ gtgattoaggctggccttt	1616
CYP4F2	2	intron1+193	tttaatcagtcctctctct C/T ttcccatcttaagtctta	1617
CYP4F2	3	intron1+324	ccctgctctacctcggcac T/C gccgctccctgcctctccac	1618
CYP4F2	4	intron1+367	tcctggaggctccctggcc G/C ttctctggcctcaggatct	1619
CYP4F2	5	intron1+402	ggatctcaccgtccatccc T/C ctgccctcaggatgtccca	1620
CYP4F2	6	exon2+35	gootgtccctggctggcctc T/G ggccagtggcagcatccct	1621
CYP4F2	7	exon2+166	cggtgtttcccaaaccccc A/G agacggaaactgttttggg	1622
CYP4F2	8	intron2+125	ggcagagaagcaggaggac A/G tcttactcattcctctgct	1623
CYP4F2	9	intron2+440	ggccgtctcccaactccac T/C acaccgaaggcacctttct	1624
CYP4F2	10	exon3+48	gttctgactcagctggggc C/T acctacccccagggtttta	1625
CYP4F2	11	intron3+701	agactccaccccagctggg T/A cctttccttgaccctgtg	1626
CYP4F2	12	intron3+742	cttccatogttggacggc G/A eggctgagcaggggaatg	1627
CYP4F2	13	intron3+1020	gotttagctttctcatgtc G/A cttttctatcaaggtggc	1628
CYP4F2	14	intron3+1039	cgctttcctatcaaggtgg G/A cttttctcatgatgtcaac	1629
CYP4F2	15	intron3+1040	gcttttctatcaaggtggc G/G ttttctcatgatgtcaacg	1630
CYP4F2	16	intron3+1920	ccactctgtatcctctgtt G/C ctgtttctcatgtctggg	1631
CYP4F2	17	intron3+1945	ttgctcatgtctggggcgt T/A ctctacaatggctgttat	1632
CYP4F2	18	intron3+2621	agcattctgtagatgtga G/A ctgtgtcaggggttcgga	1633
CYP4F2	19	intron3+2665	tgttgatcgttagggac A/G tgtcaaggcatgtggaacc	1634
CYP4F2	20	intron6+194	gggtttgaactgtgtgtgt G/T gtcagagctcttagggac	1635
CYP4F2	21	intron7+67	tgtgaatgtcagatgaag G/A atttgaactgtattaaggg	1636
CYP4F2	22	intron7+2811	ttccaagggaattgccatt T/G aattctcctgttaactcaggt	1637
CYP4F2	23	intron7+(3096-3097)	gggttgggggttgggggg (G) ttactgccttctctccagga	1638
CYP4F2	23	intron7+(3096-3097)	gggttgggggttgggggg ttactgccttctctccagga	1639
CYP4F2	24	intron8+145	gggtgctgtctacctcgggt G/A ctgaagcagccagagccc	1640
CYP4F2	25	exon9+44	ctctcctgggtcctgtacca C/T ctgcaaaagcaccagaata	1641
CYP4F2	26	exon11+48	gaaccatcacaaaccagct G/A tgtggccggaccctgaggtg	1642
CYP4F2	27	intron12+108	tgttocaagttcoagctctc C/T ttccctcacctcctctggag	1643
CYP4F2	28	intron12+285	gcattgggcatcaggcacgg A/T tacccctctctctattctc	1644
CYP4F2	29	exon13+238	aagtgaagcctagattacc C/A taagaccctgttccacagtc	1645
CYP4F2	30	exon13+342	tgtgctgaatgtcatggc G/A gccctattcacagtagccaa	1646
CYP4F2	31	exon13+563	tagtgaactgtcctttata T/C gaatttcagaaacaggcca	1647
CYP4F2	32	exon13+707	aaatgtccggaccctagata G/C tgaogaaagtagcacagcac	1648
CYP4F3	1	intron2+258	cattaatgcacctctcgggg G/T cttctgggcagggggttggg	1649
CYP4F3	2	intron2+916	ttaggacatgtctgagtc C/T acactgtccccacaaacct	1650
CYP4F3	3	intron2+3417	ctccaggtctcacacagtg C/T acttctctcttggcttag	1651
CYP4F3	4	intron2+4090	gagagcatgaattgggtct G/A tgtttttctctcoagatca	1652
CYP4F3	5	intron3+89	tgtctgtcctccggcggtc G/A cgtgcccatgtgcagacagg	1653
CYP4F3	6	intron3+243	tcaagtctgtgtacggcta C/T gtctgtcacctgtatat	1654
CYP4F3	7	intron3+502	aggcttggggcccaaggctcc G/C taagtgaactgtctgagaca	1655
CYP4F3	8	intron3+755	tttttggccatgtcaggac A/T tgtgaacacatgtcagtg	1656
CYP4F3	9	intron3+855	gggacagacagggtgtcta G/A gtcctgtgaaggcattctg	1657
CYP4F3	10	intron3+970	cctgacatagctcctacgt C/T catgttaggcaggtcattg	1658
CYP4F3	11	intron6+122	gaggagtgttatccctgat C/T gttgaaggactgtatgaat	1659
CYP4F3	12	exon7+159	ggtgcacgacttcacagatg C/A cgtcatccaggagcgccgcc	1660
CYP4F3	13	intron7+2107	caggttgccagtgattttt T/Δ ctcaaaaagtttcatcaag	1661
CYP4F3	14	intron7+2255	gaccaagaagggtctaggag T/A gcaagatggccttgggtt	1662
CYP4F3	15	intron8+132	cctcaatgcaagggttctgt A/C caccctcgggtgtgaagca	1663
CYP4F3	16	exon9+59	taccaccttgcaaaagccccc G/A gaataccaggagcgctgtcg	1664
CYP4F3	17	intron9+13	attgaatggtgagtgaggt G/A ctggtgccctgttctgagc	1665
CYP4F3	18	intron9+36	ggtgccctgttctgagcct G/C tctattggtctgttcccc	1666
CYP4F3	19	intron9+167	acccatcctgactgtctggg C/G aaaggttataggcccttagg	1667
CYP4F3	20	intron9+369	tcctaatctcctaccctcc G/A tccagtcagggtattataa	1668
CYP4F3	21	intron9+458	tcattcatctcactcgtct T/C gttcagcaaatctctcata	1669
CYP4F3	22	intron10+46	ctcctgggtagggaagggg A/C cctcaggcaggagcattg	1670
CYP4F3	23	intron10+63	gggcccctcaggcaggggc C/A ttgtcctgactgcccccttc	1671
CYP4F3	24	intron11+14	ccctgaggtgcgggcccccc C/G tctctgttttttccattcc	1672
CYP4F3	25	intron11+84	gatcaggagaatccaatc G/A cctccctcaagacacacac	1673
CYP4F3	26	intron11+113	caagacacacaccactgtct T/C tccaaggctggcggactggg	1674

遺伝子名	No.	存在位置	配列	配列番号
CYP4F3	27	intron11+164	cggcaaccctcttctgtctc T/G cctccaggtctatgaccct	1675
CYP4F3	28	intron11+165	ggcaaccctcttctgtctc T/C ctccaggtctatgaccct	1676
CYP4F3	29	intron12+156	gaaaaggcccacagagtagg G/A ttgggttggctcctagaagga	1677
CYP4F3	30	intron12+253	gagctcggctaggctcgag G/T atatgcaagcccacatgggg	1678
CYP4F3	31	intron12+346	tgggtgtccaggccaggtt A/C ccggcttgatggggccagga	1679
CYP4F8	1	5'flanking-61	accatgtttaccatcattg G/T tctggagctccccagcccc	1680
CYP4F8	2	exon1+67	gtggcagcatccccgtggt G/T ctctgtctgtgtgtggggc	1681
CYP4F8	3	intron1+707	tacgagcaggtattcaaca T/G tatttcaactattccactg	1682
CYP4F8	4	intron1+857	acacccctaccctcacatc G/A tgacacagctggccagaa	1683
CYP4F8	5	intron1+907	tgccatctcccccctcccc G/A tgcagggtcattctttat	1684
CYP4F8	6	intron2+668	ttggcacttccacatag T/C tcatgtccctcttgcctcag	1685
CYP4F8	7	intron2+818	gccacagagaccatggctca G/A gccccaaaatcctgagtac	1686
CYP4F8	8	intron2+1079	tatgcttgggtttgcagaa C/T atgttgacatgtaggagc	1687
CYP4F8	9	intron2+1194	ccggtcccccttatgcccc G/A accctcctttctcttctgc	1688
CYP4F8	10	intron5+45	aacatggagtgagtgagg G/T tgggttggggagagcaaa	1689
CYP4F8	11	exon8+(19-20)	ggccatgacaccacggccag (GCCAG) tggcctctcctgggtctgt	1690
CYP4F8	11	exon8+(19-20)	ggccatgacaccacggccag tggcctctcctgggtctgt	1691
CYP4F8	12	intron8+222	ttttttcccccactaactg C/G tatgcaagcttagtaaaac	1692
CYP4F8	13	intron8+334	cttgagaataaacggcaaa A/T accgcaatgacttttgacc	1693
CYP4F8	14	intron8+1999	tttaagtacattattctc T/C tgcttttagctatgactag	1694
CYP4F8	15	intron8+4184	caggaggcccggtatgctc C/T ctggataattgttgggtgt	1695
CYP4F8	16	exon9+119	acgtgtgtctccacagacgc C/T gactcatcccaagggtgc	1696
CYP4F8	17	intron11+282	gggttgggggtccgggct G/C gtctctggcgcagtgaggcc	1697
CYP4F8	18	intron11+340	tgcagtcagacctccacct C/T ggcgccacaggaaactgcacg	1698
CYP4F8	19	3'flanking+35	atcacctacctttgcaccaa T/C tacctttcagatttccggt	1699
CYP4F8	20	3'flanking+83	ctgtgttggccctgtgcct G/C agtcccgccgagtgccagta	1700
CYP4F8	21	3'flanking+90	ggccctctgtcctcagtcgc A/G cggatggccagtagggggcg	1701
ALDH1	1	intron1+564	cattatttcttcccaagt T/C tgttgcattggagcagatg	1702
ALDH1	2	intron1+710	gttctgagagtaactctgaa C/T tttgcttttcacactgt	1703
ALDH1	3	intron1-3868	ccctttttatctccagaata C/G agcctaaactctttctctg	1704
ALDH1	4	intron2+2933	taagtatgtatactatatt T/C gatagatatactatactata	1705
ALDH1	5	intron2-1646	caatgtgattacatgaatg C/T gcaaatatgcactgtatag	1706
ALDH1	6	exon3+54	caggcttttcagattgagtc C/T ccgtggcgtactatggatgc	1707
ALDH1	7	intron3+157	taggcccccttaacattgaac T/G attctcaaatagtaactggo	1708
ALDH1	8	intron3+339	tgagtctctagaatgatat G/A ttaggtttattcaagcatt	1709
ALDH1	9	intron3+855	agcagttagatgagtcagag C/A ataataagttggggagggg	1710
ALDH1	10	intron3+735	gaagccaatttaacataaac C/A aataccaagatcaggttca	1711
ALDH1	11	intron3+883	gcaagtatgttaatacaag G/A accatttattaotcaaatat	1712
ALDH1	12	intron3+1757	agatgacaagattttctcta T/A ttcaaaaattccctagcaaa	1713
ALDH1	13	intron5+90	ttctctaaaacagatggatg C/A ttatgtatttgttaaatgtg	1714
ALDH1	14	intron6+213	caggaagccaaacacaaagg T/C ttgggtctcaacagtcacact	1715
ALDH1	15	intron6+1323	ttttgaattaaattctata C/T tgtaacttttaacttttta	1716
ALDH1	16	intron7+638	gcaaaaggaagtggtggaag C/A atactgtaccatgcaaaaaa	1717
ALDH1	17	intron9+(1462-1463)	aatgggaattotatgttttt (T) gttgtgattattatctatc	1718
ALDH1	17	intron9+(1462-1463)	aatgggaattotatgttttt gttgtgattattatctatc	1719
ALDH1	18	intron9+1757	tgatctageatttatttct A/G taatgastagaatccagtg	1720
ALDH1	19	intron12-1383	aatcccaacttattactctcc T/G gagagcttcaagtgcctata	1721
ALDH1	20	3'flanking+40	tttaagtacaagttttgt T/C acagtgtttctcttctca	1722
ALDH2	1	intron3+1766	aaattgtgtgcctcctgc C/Δ tggccccctctcctcctc	1723
ALDH2	2	intron8+52	gaaggtagccctggccacct G/C tgttggcctccagccgac	1724
ALDH2	3	intron8+69	cctgtgttggctccagcc G/A atcctgtcgtccccccagtg	1725
ALDH2	4	intron9+5197	gctttctatgaccttggtc C/A atttccagttgtctgttg	1726
ALDH2	5	intron11+114	gagctgggtcagtttctcc T/C gggcagggtgtgtgtcga	1727
ALDH2	6	3'flanking+411	ggatatgatttctgcccctc T/C tctgtgtgggttaaacagct	1728
ALDH2	7	3'flanking+(432-433)	tctgtctgggttaaacagct TC/Δ tgttcatgcatttacttt	1729
ALDH2	8	3'flanking+488	ccaataagaatgtgttgaa G/T gtttcatgcatttacttt	1730
ALDH7	1	5'flanking-1455	ctgcctgtcccaaccacag C/T agottgacatcatccccc	1731
ALDH7	2	intron1+464	catgaatgactctgggaag A/G atcattcttagcaatggact	1732
ALDH7	3	intron1+2269	aaatggaatccaaacagcaa G/C agacctccctcaccggtca	1733
ALDH7	4	intron2+1349	actgagcttctgccaccggc C/T gcctgcggcccttcatgaga	1734

遺伝子名	No.	存在位置	配列	配列番号
ALDH7	5	intron2+1820	tccgtgtggaaggacaccttc C/G cccagcctcagtggttagga	1735
ALDH7	6	intron2+2046	aacctcagcgcgtgcctcag C/G caggagaccagcctggcccc	1736
ALDH7	7	intron2+2939	aagcacgcactgaacatgga G/A tgagtgaagtaacgaatgaa	1737
ALDH7	8	intron3+7	tgcccaagaacctggtgagc C/T ggcgggctgaggcggcag	1738
ALDH7	9	intron4+36	gcccttcgggtcaccccttc T/C ccgtcgcggcctcagggcc	1739
ALDH7	10	intron6+(116-117)	attctcctctctctctctct CT/Δ ggaaccaggctgggagcagtc	1740
ALDH7	11	intron6+263	cagaccctcatagtgacce T/C gctgcccccaggctcttag	1741
ALDH7	12	intron6+1298	gtagacagagctggactcca T/G ccttggtgataaggatcc	1742
ALDH7	13	intron6+1411	gccagggtcacagcagagg C/T gggaggagccaagggttg	1743
ALDH7	14	exon7+185	acctgcgtggccccgacta C/T gtctatgcagccctgagat	1744
ALDH7	15	exon7+339	tgaggcaattgctggctgc G/A gctgtgagccattggggcc	1745
ALDH7	16	intron7+249	ccagggtccagggctcagc G/A tgataagatgaactcccatc	1746
ALDH7	17	intron7+277	atgaacctccatccaccac C/T ggctatcctgaaggctga	1747
ALDH7	18	intron7+498	gaccaaggctggggattct C/T tgtgtccacaggccctgag	1748
ALDH7	19	intron8+14	cgcccaaggctgggtgcgc C/T gggctggcagggctcaggag	1749
ALDH7	20	intron8+49	caggagcccgagtgaggcag C/T acaagggtggcagcaggg	1750
ALDH7	21	intron8+111	tcaggacttgggagtgagg A/T cctcttggtctgtctctgc	1751
ALDH7	22	intron8+3219	atcctgatggggtcagggc A/G gcctcacgcacatcctgttc	1752
ALDH7	23	exon9+33	gtctgacccagaccagcag C/T gggggcttctgtgggaacga	1753
ALDH7	24	intron9+948	tcaccggccccagagctgac C/A cttcttggtggccgtggccc	1754
ALDH7	25	intron9+1087	aggctcccaagcctgggtc C/T ctttgccccaccactct	1755
ALDH7	26	exon10+137	ccgaactgccgcgcgcct G/A aggatgctgctggggccat	1756
ALDH7	27	exon10+397	cgctcccaacctgagagcc G/A agtgggagggcatgggaac	1757
ALDH7	28	exon10+1198	ctcttcccatgctgctcat C/T ctcttgagcccaatccactc	1758
ALDH7	29	exon10+1475	cagggtggagcctgagtttc G/A tctcctgtctctgtgctga	1759
ALDH7	30	3'flanking+15	cctggcaatacttcatctc A/G gtgattgctttctgtcat	1760
ALDH7	31	3'flanking+60	caacaggactctgacacaag G/C ccctggcgttgggtaacaat	1761
ALDH8	1	intron1+98	agggaggggagtgatgccc G/A tggccctggttcagggggc	1762
ALDH8	2	intron1+157	atgctctcagggccatggg T/C acgggcttgcacaggagag	1763
ALDH8	3	intron1+354	totgtggacagacaaggatt C/G ggtcggggcaccagggtg	1764
ALDH8	4	intron1+851	tatgacagggtccatcaggcc T/G caacttctgtgtcttat	1765
ALDH8	5	intron1+894	ctcagcatctgccccacag T/G gcttttgacacagttggttc	1766
ALDH8	6	intron1+463	aagaacccctccaggtccct C/G gtttagtccagaaggagg	1767
ALDH8	7	exon2+61	gootcaactgaggcgac G/A cggccggccaggttccgggc	1768
ALDH8	8	intron2+8	ggacctgcataaggtggccc A/G tggagagtgagcccccag	1769
ALDH8	9	intron2+23	ggccctggagagtgagccc G/C ggcagggtctggagcagct	1770
ALDH8	10	intron2+(180-181)	ttcactctgaacactcaca (A) gccaccctgtgatcaggct	1771
ALDH8	10	intron2+(180-181)	ttcaactctgaacactcaca gccaccctgtgatcaggct	1772
ALDH8	11	exon3+72	gactacgctctcaagaacct T/G caggcctggtgaaggatga	1773
ALDH8	12	intron8+375	ctgcagcatcctaacctac C/T gtcggactcaagggtgocg	1774
ALDH8	13	intron8+463	aatcaccccccagggcacc G/A accgtcactgagagggtgct	1775
ALDH8	14	exon9+33	atgctggagcggaccagcag C/A ggcagcttggaggcaatga	1776
ALDH8	15	exon10+428	aggtgtcctcaactcacc G/T cctccccattccagccctt	1777
ALDH9	1	exon1+121	actgtgagggtatggcggg G/A tggtagggagaaatgttgt	1778
ALDH9	2	intron1+67	cgcgatttccggccagcc C/G ccgttctgtgttctgcag	1779
ALDH9	3	intron1+103	tcagcgttgacttgagcag A/G agacagtgacagtggagagt	1780
ALDH9	4	intron1+1818	gaatttttgagaaaaaaa A/Δ tgttcttttaggttcctt	1781
ALDH9	5	intron2+5891	tcaggacaggaagtaaga G/A gttacatttctaatctct	1782
ALDH9	6	intron2+6398	atcaaaaacacttctctgat T/G atcgtgctctgaacctgct	1783
ALDH9	7	intron2+9677	atgacgtgagtttggtct A/G ttctttgtttttcttgcct	1784
ALDH9	8	intron2+9991	ggggaggtgagggacctac C/T ctggcttctaactttcat	1785
ALDH9	9	intron2+10198	ttgtcagagacctctttgat A/G atccttactgtactatcag	1786
ALDH9	10	intron2+10258	ttagtataaacttttttt T/Δ gtaaggatggagataatag	1787
ALDH9	11	intron2+11382	catattcaattttttatg T/C ctttagaccaagaaaggca	1788
ALDH9	12	intron2+11455	taacctttaagctcatcat C/T ggaccatctattgaatttct	1789
ALDH9	13	intron2+12044	atttaaagtgaagctattt C/T tagtttaaaaattgagcag	1790
ALDH9	14	intron3+334	ctatttgaacacttttttt T/Δ gacagtgtataaagtttca	1791
ALDH9	15	intron3+368	gttttcaacattgatattg G/Δ aaggttgtagggccttagga	1792
ALDH9	16	intron4+191	ccctcaaggagcttatggt T/A aggtgtacacactcatgtc	1793
ALDH9	17	intron4+557	tagaaaaattgtaatgtta A/G aaagcattactgttaggcca	1794

遺伝子名	No.	存在位置	配列	配列番号
ALDH9	18	intron5+830	agttcaagatgattttag G/C ttcaggccctagtgactta	1795
ALDH9	19	intron5+838	atgatttttaggttcagg C/T ctggtgacttagcatgcaa	1796
ALDH9	20	intron6+120	agaaaaagtgacacaaatagt A/C caaagaattcccatgtacct	1797
ALDH9	21	intron6+2569	ettttaaatcigtcttaata T/C ttttttgggggagagacac	1798
ALDH9	22	intron8+1414	ccgatcttcaaaaaattagc T/C gggggtggtggtgacactg	1799
ALDH9	23	intron9+664	aaagttcacatttttttt T/Δ ataactcatggtcaagagc	1800
ALDH9	24	intron9+2170	taatgcacacatttttttt T/Δ cttoataggacatccaacg	1801
ALDH9	25	exon11+587	aaaaacaaaaacaaaaaa A/Δ cctgttctcttatagggtc	1802
ALDH10	1	intron1+39	gggtgtggggaactggccc C/T cggcggcactgtggactg	1803
ALDH10	2	intron3+2491	tgccgcgaagaattggcac T/A gctgagttctacatgcagtt	1804
ALDH10	3	intron3+2595	ttctgtacatcaactgtga T/A ggattgaggccagttctgt	1805
ALDH10	4	intron3+2775	taccgcttggccctgacca G/A gggtaaatcttcaataact	1806
ALDH10	5	intron3+3424	aggcactctgcacacacccc G/A cgtctcatgcattttccctg	1807
ALDH10	6	intron3+3676	atgtgaagagattgotgat G/A ttgaogttaggatttatt	1808
ALDH10	7	intron4+481	tagaaaaataagaggtttcag G/T ttctctctgctaaatccggt	1809
ALDH10	8	intron4+769	atootgctttatacctgaac G/A tcttgaggcagagccaaaa	1810
ALDH10	9	intron4+796	aggcagagccaaaagccaca A/G ccaggagagctgtaccgaa	1811
ALDH10	10	intron5+254	atgtgttggcatatactt T/G ttttaaaaaagttaaataat	1812
ALDH10	11	intron6+137	aatcctgctttctgtatatac T/C gtacctgtagctttgttat	1813
ALDH10	12	intron6+923	eggctaagtgaatgtagag G/A aagggtctatcctgattagc	1814
ALDH10	13	intron7+331	tgcttttctgatgtaatacc A/Δ caggcctgtgtgaataaca	1815
ALDH10	14	intron8+643	tttagacatgaacctgcctg C/T ctctcccatgtgagatga	1816
ALDH10	15	intron8+666	ctcccacatgtgagatgact G/A actcagctttttattctcc	1817
ALDH10	16	intron9+2129	tgtttcaatttttaaaaaaa G/T gttgactttggaattcatg	1818
ALDH10	17	exon10+(1894-1895)	ttgctgtctactaataca CA/Δ tctgcttcaaatgaacata	1819
ALDH10	18	3'flanking+31	gtatttgcacatttttttt T/Δ ctcattttaaaattcttagc	1820
ALDH10	19	3'flanking+106	gtgtgttgggggtggtgtt G/A gtactatagtaaatgggt	1821
ALDH10	20	3'flanking+1630	aaaagcacgtgggaacaca A/G ttaatcatgtcttaccgtat	1822
ABCC7	1	5'flanking-834	gctaaaaacactccaaagcct T/G ccttaaaaatgcgaactggg	1823
ABCC7	2	5'flanking-729	cctccttgacagattttttt T/Δ ctctttcagtagcttctcta	1824
ABCC7	3	exon1+125	tagcagggacccacagcggcc G/C agagaccatgcaagggtogo	1825
ABCC7	4	intron1+8200	ctatgtgagacgttaagaag G/A tagaggtggccaagaaggaa	1826
ABCC7	5	intron1+7538	agttcttttcttagcatgg C/A ctacagaggtgcaactaact	1827
ABCC7	6	intron1+13519	gaaacttaaatctttagtca T/C acaattgtgtctacatactg	1828
ABCC7	7	intron1+14110	attacacagtatttttttt T/Δ aatttgggggaagtogatt	1829
ABCC7	8	intron1+14293	gccaggcagattcctgactc C/Δ tataaccagagcttatcag	1830
ABCC7	9	intron1+14316	taaccagagcttatcagag C/G atttatgtcccaaaagagaa	1831
ABCC7	10	intron1+14433	cagaataacaatgatggctc G/A gaaaaataagggtatttctg	1832
ABCC7	11	intron1+14824	acgttttgacagttgcaaaa G/C ttttttctttaagcttaa	1833
ABCC7	12	intron1+23401	aatatttttgaatcacta C/G ggtatcctgcatagtatt	1834
ABCC7	13	intron3+879	gaaaaatttcagttcataca C/A ccccatgaaaaatacattta	1835
ABCC7	14	intron3+922	acttatcttaacaaagatga G/C tacacttaggccagaatgt	1836
ABCC7	15	intron3+933	caagatgagtagacacttagg G/T ccagaatgttctctaagct	1837
ABCC7	16	intron3+13704	tttttccaaataaaaaaaa A/Δ tcagtgatattctgaaatg	1838
ABCC7	17	intron3+13758	tattaaagaacatgatgctt A/G aaacagattagggaacta	1839
ABCC7	18	intron4+240	ctctgtgtagtttttttt T/Δ ctctaatcatgttatcatt	1840
ABCC7	19	intron4+376	ttatgttcagcaagaagagt A/G taatatatgattgtaatga	1841
ABCC7	20	intron4+586	tgccagacaagagacccaaa T/C tgccaggccatcatttaggt	1842
ABCC7	21	intron4+1089	tttcaatctgaacattttac G/A taagtgaagactttgtaga	1843
ABCC7	22	intron4+1615	aaagttaggtgtgtattgtat G/T tgtcttcotttctcaatgt	1844
ABCC7	23	intron4+1946	aatacaaaaacttgagct T/C tgcctatacttttcaagaat	1845
ABCC7	24	intron6+783	tatctaagttttggagtcaa A/G tagcaattttgttgaatccc	1846
ABCC7	25	intron6+(1128-1131)	gattgattgattgattgatt GATT/Δ tacagagatcagagagctgg	1847
ABCC7	26	intron7+(731-732)	gtagcaatgagaccattttt (T) cticagttgagctccatgtt	1848
ABCC7	26	intron7+(731-732)	gtagcaatgagaccattttt cttoagttgagctccatgtt	1849
ABCC7	27	intron7+1434	gaatgtttgtgttaacctg T/C ataactgtgcatgaaattgt	1850
ABCC7	28	intron8+752	oatgctctcttctcagctccc A/G ttcttcttattatcaccta	1851
ABCC7	29	intron8+1109	tatggccaagacttcagtat G/A cgtggacttaattcttctt	1852
ABCC7	30	intron8+1312	atgaagacattcatttttt T/Δ ctccgtccaatgttgatta	1853
ABCC7	31	intron9+(6521-6522)	gtgtgtgtgtgtgtgtgt (GT) ttttttaacagggttttggg	1854

遺伝子名	No.	存在位置	配列	配列番号
ABCC7	31	intron9+(6521-6522)	gtgtgtgtgtgtgtgtgtgt tttttaacagggtattggg	1855
ABCC7	32	intron10+2119	gaacactttatagtttttt T/G ggacaaaagatctagctaaa	1856
ABCC7	33	intron11+3867	tttttctcagaagaaltaga A/Δ gaggggagaaattggttaa	1857
ABCC7	34	intron11+11844	tgaatcaaaatcatctaaaa A/Δ gctttagaaaccagacttt	1858
ABCC7	35	intron11+12144	atattaacagaggttacata T/C acttacaacttcatacatat	1859
ABCC7	36	intron11+20975	gtgtgtagatgaaatgccag G/A gtaaatcacatagcatctaa	1860
ABCC7	37	intron11+27057	atggagagagaagtttttagt G/A agggagaggaaggagagtg	1861
ABCC7	38	intron11+27131	gagagagacttttttttt T/Δ aaggcgagagtttactacct	1862
ABCC7	39	intron13+152	gtattaactcaaatctgac T/A gccctactgggcccaggattc	1863
ABCC7	40	intron13+287	tttgagtagatcattgctctg T/C gatataattactttaatta	1864
ABCC7	41	intron15+(35-86)	atcacatatatatcacacac AT/Δ aaatatgtatatatacacat	1865
ABCC7	42	intron15+106	taaatatgtatatatacaca T/A gtatacatgtataagtatgc	1866
ABCC7	43	intron15+3341	ggaggtataaattgttaaat A/C actgagaccacaaacttaca	1867
ABCC7	44	intron15+5556	tgcatttgactaatagtaaat A/T atttttagggcagattatga	1868
ABCC7	45	intron15+5919	tgttagttctatgtggaaac C/A gtgaggaaataatttatat	1869
ABCC7	46	intron17+2479	caaaaaggtaggaagtcag A/C ggagaaggagaccctatgt	1870
ABCC7	47	intron18-81	aagtgtgcaaaaaaaaeae A/Δ gaaataaactcactgacacac	1871
ABCC7	48	intron19+751	cattaataaaatacaaaatc A/G tatctattcaagaatggca	1872
ABCC7	49	intron19+820	tgacattgttagtagatta T/C tctaatttagtcttttcag	1873
ABCC7	50	intron21+1532	ttacctttaacttttttt T/Δ agtttgatcagctctottta	1874
ABCC7	51	intron21+1607	atgottttggagttggtct G/T ataaatgtatagaaatttt	1875
ABCC7	52	intron21+11260	atgtggaacaatcatgacta T/C atgcctttacttctctctat	1876
ABCC7	53	intron22+(130-131)	agaatcaatattaacacac AT/Δ gttttattataggagtcac	1877
ABCC7	54	intron23+1828	ctgtcctaaagttaaaaaag A/Δ aaaaaaaagggaaggagaa	1878
ABCC7	55	intron24+(7100-7112)	cctttacaaactcttagaca (T)12-14 agtttaacatgttacaac	1879
ABCC7	56	intron25+237	actcttccccctgtcaaca C/T atgatgaagctttaaatatc	1880
ABCC7	57	exon27+115	gggtgaagctctttccccc C/T ggaactcaagcaagtcgaag	1881
ABCC7	58	exon27+334	ggatgaattaagtttttttt T/Δ aaaaaagaaacatttggtaa	1882
ABCC8	1	5'flanking-1099	aaaggggctgaaggggtctt T/C cttttgtttccctgactg	1883
ABCC8	2	5'flanking-(424-422)	caccocaccaccaccaccac CAC/Δ aaggtaaacgttctgcccac	1884
ABCC8	3	intron1+1212	agcctgggcaacatagtag A/G cccccccgcccctttctaca	1885
ABCC8	4	intron2+1003	aggaggaactgttaaacac C/A ctgcatgtttggctggatt	1886
ABCC8	5	intron2+1253	catctcactaaggagaatc C/T agtaaccagcaaggatgaga	1887
ABCC8	6	intron2+1382	cccagactgcactcctgcag T/C gctgcctggctcctgtatgt	1888
ABCC8	7	intron2+2371	tttcagagctgtctggaaat T/A tagggggcaggtggggggg	1889
ABCC8	8	intron3+1957	ccatccccctagccagggg C/T cccacatgagtatgaatgg	1890
ABCC8	9	intron3+(2088-2089)	agagaacccttcattaacca (CCA) gggcggtggctgaccagtg	1891
ABCC8	9	intron3+(2088-2089)	agagaacccttcattaacca gggcggtggctgaccagtg	1892
ABCC8	10	intron3+2204	taaaagcaagaattatcaacc G/A tggatggattgtctctttc	1893
ABCC8	11	intron3+2286	ttatctccccctgaaggac A/G ctccacagagccagaaattc	1894
ABCC8	12	intron3+2312	cagagccagaaattctagaa C/G agggaaaagtggaggagg	1895
ABCC8	13	intron3+2356	ctgtgaactgcaggagcaga A/G ggaaatgggtattggagaa	1896
ABCC8	14	intron3+2359	tgaactcagggagcagaagg A/C aatgggtattggagaatgg	1897
ABCC8	15	intron3+2370	gacagaaggaaatgggtatt G/A ggagaatggcagccctcca	1898
ABCC8	16	intron3+2382	tgggtattgggagaatggcc A/G gccctccaaggggctgatt	1899
ABCC8	17	intron3+4910	ggggacagcctcagctgtg G/A aattctocagctcctagaga	1900
ABCC8	18	intron3+4969	cattttccagctcctgaggc A/G tgagagcagaaggccgatgc	1901
ABCC8	19	intron3+5003	ccgatgcttctgcccctcat C/G ctaatgtcctcctgcaggga	1902
ABCC8	20	intron3+5019	ccatcctaattgtcctcctgc A/C gggacccaaaggtggatgga	1903
ABCC8	21	intron4+14	gttaggggtaagcagggccac C/T tggccaggtgggtggga	1904
ABCC8	22	intron4+187	agacactgcactgtggccac G/A tgtgctacccccagggtcc	1905
ABCC8	23	intron4+204	cacgtgtgctctaccccagg G/C toocagagggaggggggt	1906
ABCC8	24	intron4+254	gttgcgtgaggtggcggat G/A actttccgtagaagggaag	1907
ABCC8	25	intron4+357	tgtattcatatcgtcacgt G/C gtaaatgaatgagtaagtgt	1908
ABCC8	26	intron5+92	ggcattagggtcaaaatcctg G/A tgggacaaaagggaactg	1909
ABCC8	27	intron6+4205	tctgtagaagtacatgggg G/A catgaagatcattgcttga	1910
ABCC8	28	intron6+5519	gattccaggggaatgttaa A/C agggccgggtcttctcaaac	1911
ABCC8	29	intron6+5575	tctgacccagtaaccgacg G/C ggggcaagtttccatccccc	1912
ABCC8	30	intron6+6587	gttgccatctgagatcttgc C/T ggaagtacacaagagacct	1913
ABCC8	31	intron6+6747	ttcactggccttttctgct C/T agtaattgtacattacagg	1914

遺伝子名	No.	存在位置	配列	配列番号
ABCC8	32	intron9+191	gaggaaagctgcctcccggtg A/G ggacaggaagcgggcattggc	1915
ABCC8	33	intron10+1983	cccagaggtccaacctccct T/G tgtccagctagaccatgggtg	1916
ABCC8	34	intron10+2724	cctgggcatgtttttttt A/G taacagcatcaaaagatgt	1917
ABCC8	35	intron10+2938	gccccccaggactcctcac G/C tgtcaagtcacctaggagag	1918
ABCC8	36	intron10+3094	tccgaggatgtttttttt T/Δ cctccgttagtcagcagtg	1919
ABCC8	37	intron10+3368	tcctgctcatatcgggcacc A/G tcagactttctggcaggcaa	1920
ABCC8	38	intron10+8897	gggtttgattaaagcctoa C/T gggcagagaaattcgccatc	1921
ABCC8	39	intron11+308	tgtgtattgtagaagtgtg G/A gaaatccagaaacagaaagct	1922
ABCC8	40	intron11+1171	gcccctctcatttccctcca G/A tgtctgagcgtttccagtgtg	1923
ABCC8	41	exon12+7	gcctctgtccacagactttc G/A tgggcccagctcagctttctc	1924
ABCC8	42	intron12+356	accagaagtagggccatccc G/T tccccacgtggtgccccat	1925
ABCC8	43	intron12+934	tgggttcaagatgggaatgg G/T gcataactcagcaaaattat	1926
ABCC8	44	intron12+1370	ggagggagggctggacaggg C/G atgaaggcagagcctgtgtg	1927
ABCC8	45	intron15+412	ggaggtgggaccagagatgg C/T gtttctgggaccacaagga	1928
ABCC8	46	intron15+688	actccccgggccccactcao A/G tetgcccacttccctccctg	1929
ABCC8	47	intron16+4464	aotcattcccaagtattgato G/A agaagagaggttaggtactgg	1930
ABCC8	48	intron16+4574	ttgaagactttaagtgttt T/C tggttcactcatttcgcaa	1931
ABCC8	49	intron16+5011	agctaaagcaaaacagcct C/T tgacctggcagcattccca	1932
ABCC8	50	intron16+7608	tgtcctaattttttttgac C/G ctataacttctgacttcg	1933
ABCC8	51	intron16+7730	ccagctcctagtgggtgga G/A ggaagacatgcaggtgggg	1934
ABCC8	52	intron16+8369	ttgcaactgagttaggccc T/C ggagagcttactgtgtgctg	1935
ABCC8	53	intron16+9708	tgcacttgccgcctacttat T/G ccagaccocaaatgattggctc	1936
ABCC8	54	intron17+651	tetagttaattgaggtctg A/G gtccctcaaaaccttccctc	1937
ABCC8	55	intron17+692	cccttacctctccaaaacac A/G cttgagataccctagaggtg	1938
ABCC8	56	intron17+1541	ctcaggatcttctcgaggga C/T atggttactcccatgagag	1939
ABCC8	57	intron18+580	actaagcagattctaccaa C/T tgcacctcccatcccttg	1940
ABCC8	58	intron18+658	gaacaagccctgagaatgc C/T ttccgcacccctactcccg	1941
ABCC8	59	intron18+660	acaagccctcagaatgct T/C ccgcaocccctactcccgcc	1942
ABCC8	60	intron19+93	gccttccatgatccacca T/C acccagccactctcactcccc	1943
ABCC8	61	intron19+123	tctcactccccaggtgcta T/C ctgcactccagcctctccat	1944
ABCC8	62	intron19+219	cataggggagagggcaggaa C/T ggaggggaaggagagagccc	1945
ABCC8	63	intron19+845	tagtalttaacctgccaaa C/T gctgtgtgaagtgtgacct	1946
ABCC8	64	intron20+338	tcctctccacagcttagac A/G aacaggattctcctgtgact	1947
ABCC8	65	exon21+10	tttgtgacagggcatcaac C/T tgtctgtgtgtcaacgccc	1948
ABCC8	66	intron21+192	caaggatagocaaatgccc C/Δ attgagacttcagatggag	1949
ABCC8	67	intron23+17	gaaggttggatattccagg A/G tggccaagcagccaccctg	1950
ABCC8	68	intron23+67	gttctgtctgaacctgaact C/T ataaaggtcttccgtcctt	1951
ABCC8	69	intron26+268	gtgagcgtctgcacatcaa G/C taaagattgtttctctcc	1952
ABCC8	70	intron26+308	cgataagtgggtgtaattg C/T ccactcccccatgagttc	1953
ABCC8	71	intron26+348	cagctccctgcctccctc A/G ctctctctccctccagccagc	1954
ABCC8	72	intron26+807	gacagctgtgagtcaggcc G/A agccggcagctgagaaggc	1955
ABCC8	73	intron26+834	cagctgagaaaggcggcagt G/C gtcagatgggcttgagaaac	1956
ABCC8	74	intron28+(118-121)	cctccaaaaataaaaaaa AAAA/Δ cagaatatgaaggaaatagaa	1957
ABCC8	75	intron28+1348	tgggtaagcgaagacggg G/A ttgaacgctttgagtttgt	1958
ABCC8	76	intron29+1253	ctcttaggatcttgtctaa G/T taaagaagagcggcgaag	1959
ABCC8	77	intron29+1589	cagatcccagcttctgtaa A/G cagcctcagatcagggcaaa	1960
ABCC8	78	intron29+2322	gogcctcacactcctataac G/A cgcacatgccctgatgcaca	1961
ABCC8	79	intron29+2348	atgcctctgatgcacacat T/C ttcaacacgcacttactcta	1962
ABCC8	80	intron29+2418	agacacgtcacccctccaca C/T gtctccaccctgggggtgtg	1963
ABCC8	81	intron29+2494	tcagtcctcctcagacacatg C/A cctctctccacgcagagaca	1964
ABCC8	82	intron29+2735	cgggccaaggagagtgatga C/T ggaagccaggttgatcaga	1965
ABCC8	83	intron30+386	gctcctggggctccagcctt C/T gcagcccttgtgtgtctg	1966
ABCC8	84	intron33+93	ggcttcgcagtcacctcgtg G/T cctccagggccgagggctc	1967
ABCC8	85	intron33+358	agggacctggggcagacag C/T gaggccaccctgtattgag	1968
ABCC8	86	intron38+54	cccaggacaggaactggcct G/C ttgtggcgtcatcagtgca	1969
ABCC8	87	intron38+466	aggacattctggccacatgc C/Δ tcatctctctctccaagcc	1970
ABCC8	88	intron38+529	tggcccccaccgggggtgt A/G ttcccaccatctgaccgcg	1971
ABCC9	1	intron3+305	tgttgttctcctaaagag C/A tatttgttttcccccaaa	1972
ABCC9	2	intron3+305	gtggcctctgtgcttgag T/A agttgtattttaagatcag	1973
ABCC9	3	intron3+320	tgcagaagttgtattttaag A/G atcagagctctgtgaggag	1974



遺伝子名	No.	存在位置	配列	配列番号
ABCC9	4	intron3+631	ttctgtggaatcagaggct G/C tctaaatattcctaatttt	1975
ABCC9	5	intron3+8644	tggacgcactcaacatttgc A/G agttattactccitcaactc	1976
ABCC9	6	intron4+757	aggatcatggaacactga A/G tcttagtaaaactatcttt	1977
ABCC9	7	intron4+1022	tactgtggaattttcttgc A/C acagagatgtatattttca	1978
ABCC9	8	intron5-1217	cagtggtagatgtttttct A/G ttgccatcatctacaaatat	1979
ABCC9	9	intron6+(106-107)	tatgattgttcaaataggg (T)7-9 cagagaattgaatgctttct	1980
ABCC9	10	intron6+1347	tcagtcgtattctactaaa A/Δ caaaattttgtaagtatgt	1981
ABCC9	11	intron6+1618	ctttttatttctgcttacc G/A ttttactaagggttgatata	1982
ABCC9	12	intron6+1835	cttttaataaatgcaaacgtg C/T acacotggtctataaaaaga	1983
ABCC9	13	intron7+407	ccatagaaattttcttttc T/G tttttcctaaaaaattaaa	1984
ABCC9	14	intron7+423	ttctttttttctcaaaaaaa C/T taaatgtttgtatttatt	1985
ABCC9	15	intron8+743	ttctgtagatgaagcttaag A/T gctagatettatttgaaaaa	1986
ABCC9	16	intron8+850	tttttaactttattgtttgc T/G tttcatttttaaatagaaaa	1987
ABCC9	17	intron9+585	cgaattgtgctgttttagag A/T aatctttgcaaatataaaaa	1988
ABCC9	18	intron9+1394	atttttttttttgaagtat G/C agttagatagagctgactgcag	1989
ABCC9	19	intron12+1167	atttgaagactttttaaata G/A agataattgtgctgtgtct	1990
ABCC9	20	intron12+1195	tgtgctgtgtctatattct A/G ctgagaaaactagaatttat	1991
ABCC9	21	intron12+2123	ataagtgctctccagtggtt G/A attggacttagagcattttc	1992
ABCC9	22	intron12+(2653-2656)	caaaacagataatgaaaag TAAC/Δ tattatctaaataataaaa	1993
ABCC9	23	intron13+(3043-3044)	aacatactctctctctctct (CTCTTT) aagtcataaatatattagat	1994
ABCC9	23	intron13+(3043-3044)	aacatactctctctctctct (GT) aagtcataaatatattagat	1995
ABCC9	23	intron13+(3043-3044)	aacatactctctctctctct aagtcataaatatattagat	1996
ABCC9	24	intron14+85	ttctgtgaaagtgtccaaa T/A tgtgccttttaattgttttt	1997
ABCC9	25	intron14+275	agtgccacgtattttttt T/C ggtattcctattgttttcaa	1998
ABCC9	26	intron14+453	ctcatttcaaaccttgctat T/C tggactctccacaggcattg	1999
ABCC9	27	intron14+3709	atcccttagtgatgtacact G/A agcttgccctccatcttct	2000
ABCC9	28	intron14+3813	otgatttatattagotga C/T ttccaagtccagacatcta	2001
ABCC9	29	intron14+4000	ttcttttacttcaatgtagc A/Δ ccaaatcagaagggtgacatt	2002
ABCC9	30	intron16+1466	atcccaactggatttaattac A/C ttgtgtagctgttacaacca	2003
ABCC9	31	intron16+5357	attttggaagagaattata T/G aacottccacaaactgaatt	2004
ABCC9	32	intron17+1368	aatcctgtgttttttttt T/Δ ctttttcatttttcagtagg	2005
ABCC9	33	intron20+98	aagtaactcaaggaaagatg G/A tttaactgtgaaatcgtaa	2006
ABCC9	34	intron22+28	ctcatgttcaagaagagttc A/C gagoccaattcagaagagtt	2007
ABCC9	35	intron22+194	tgaacctataaaattctaata G/Δ ccatctttggatgaggtgca	2008
ABCC9	36	intron22+1370	ccagggacaaaagaagatga C/T gtaaaccttaaggattgggac	2009
ABCC9	37	intron22+1487	agcaagcccaaggaagaagto C/G attaagttgtatttagaat	2010
ABCC9	38	intron23+(455-462)	atagccatgaaggataagaa AATTAGAA/Δ tgccatttgt tatgtttcag	2011
ABCC9	39	intron24+(460-465)	aactctttctctctatctgc TTTAAAA/TTTTAA gcaagccttg aaggagagt	2012
ABCC9	40	intron24+595	gcattgcaaaataatgaagaa A/G acaatctgtctgacattga	2013
ABCC9	41	intron28-926	aaatatttcagatttgggg G/A tgttagacatttgcgctcat	2014
ABCC9	42	intron29+2692	cttgaagtcttttttttt T/Δ aaagtaatgaaattttctaa	2015
ABCC9	43	intron29+5464	agacaaacactgttttttt G/A ttttcacaattcaacgacag	2016
ABCC9	44	intron29-1830	aactggctgaagggaaaaaa A/T tctattgtctgtaaatatt	2017
ABCC9	45	intron31+102	tgtttttgtttccacttca G/A tatccagaaaactctctcat	2018
ABCC9	46	intron33+877	aacatggaactatagtaaat A/G tagtttttttgggttcaga	2019
ABCC9	47	intron36+1281	aatttacacttttttttt T/Δ gcagggaatattttgcaaa	2020
ABCC9	48	3'flanking+197	aattgagctaatgcctgtgt T/G ttcaaatatatacatgcaaa	2021
CES1	1	5'flanking-983	tatttcttagccagcggta T/C cacagtgtatttagtaatt	2022
CES1	2	5'flanking-814	tcacattgcttgacatcac A/C cctactgtctctccacccta	2023
CES1	3	5'flanking-248	agtcctgcgaagggtgacacc G/Δ ttatgcocaaagcagttgg	2024
CES1	4	intron1+22	tgagctcttttgaagtcaaa T/Δ atcgagggaacttttgaaa	2025
CES1	5	intron1+30	tctgaagtcaaatatgcggg G/T cactttttgaaatcctgtt	2026
CES1	6	intron1+1652	aagggaatccctgagctgag C/A atgaccagcccagtggttc	2027
CES1	7	intron1+1726	cctccctgaagtctctcagca A/C tcttagctgtttctctgcc	2028
CES1	8	intron1+2716	tgottccaagggaagttoate T/G cagtattatttgaattagc	2029
CES1	9	intron1+(2747-2749)	tgtaattagcaacaacaaca AAA/Δ gaaaagaagctaaattga	2030
CES1	10	intron1+3288	ttatttgcattaaaagaaa A/Δ ctcaagcgttagcctggca	2031
CES1	11	intron1+3691	gagaatatgggaacccctt T/G ttcatctctcatccagcat	2032

遺伝子名	No.	存在位置	配列	配列番号
CES1	12	intron1+3819	tccttcttcgattatttt A/G gctggatgttttatgcctc	2033
CES1	13	intron1+3880	aaccagctcaatgggttagg G/A aggacattgatcgtcatcc	2034
CES1	14	intron2+74	gagtcaggcagtcctcctga T/C gggctgatcctttgctcigg	2035
CES1	15	intron2+552	atggaagggtgtgccattca C/A cctggccaagctgggaagaa	2036
CES1	16	intron2+885	cagtattttagatggtaag T/G attatgatgaatatattgt	2037
CES1	17	intron2+2001	ttggcatgtcagggtgcas G/A actcatgtgaaatcactcc	2038
CES1	18	intron3+2119	cgctgagtcgatgaatagtc T/C aggcctgagggtgatggag	2039
CES1	19	intron4+127	taaggcatccagcccccctc G/A taattggcaactacactccc	2040
CES1	20	intron4+347	tctgtcatgacacttagcag T/G cagccagcagggtgaaggtt	2041
CES1	21	intron4+(1984-1985)	tgtgtctctgaaggctctgc (C) tgacatctctgctcccacc	2042
CES1	21	intron4+(1984-1985)	tgtgtctctgaaggctctgc tgacatctctgctcccacc	2043
CES1	22	intron5+766	gaggtgggcagagggtcago T/C cactactggattcctcagtc	2044
CES1	23	intron5+825	ggagtagatctagcctggaa T/G agcgagtgagtcactgacc	2045
CES1	24	intron5+828	gtagatcttagcctggaatag C/T gaggtagtcaactgcccacc	2046
CES1	25	intron5+868	ctcctgagcatgaactctcc T/A cccctccactctgtgtcag	2047
CES1	26	intron7+68	acttcttcatttcagctctc C/G tcttcccagggaagtttc	2048
CES1	27	intron7+681	cctccaaaatcaacaatcca A/G ttatcgccctgtctgtagtt	2049
CES1	28	intron7+885	aggaaatctccaaagagaaa T/C acattcatatacttcgagg	2050
CES1	29	intron7+2151	gttgttaeactgaaatct C/G aggagttgatggcttcaggc	2051
CES1	30	intron7+2470	atatagatatacgaaattcac G/A gaggtagtcgggaagaacct	2052
CES1	31	intron8+128	cgtgtttttctgaggccc A/C gagaggggtgtagtactccc	2053
CES1	32	intron8+2618	cctgacttgcacacatgagt T/G gggctctctctaactctga	2054
CES1	33	intron8+2665	aaaaattattcatcaagggt G/A aaacctaaaattaagacatg	2055
CES1	34	intron8+3785	ccatggcgcgatggccatgcc G/A gtctatgtagtctgtctac	2056
CES1	35	intron8+3791	cgcataggcatgcgggtcta T/C ggtactggtctcaccctcag	2057
CES1	36	intron10+222	gtggctgggaagctgoat C/T gctcaccggggctgtgtgt	2058
CES1	37	intron10+230	gagaagctgcatcgctcacc A/C ggggctgtgtgctactttt	2059
CES1	38	intron11+1177	ctagcagggtccctgacaca C/G ctttgcaacagggaaggcag	2060
CES1	39	intron11+1311	gcctatgctctcgctctga A/G ctatatatagagttcccatc	2061
CES1	40	intron11+2025	ttctcatttggatgctaag A/G ttataaattagcataaact	2062
CES1	41	intron11+2029	catttggatgctaagetta A/C aaattagcataacacttcca	2063
CES1	42	intron11+2317	cattcacaaaagctctttct T/C ctatggttgctctgagttt	2064
CES1	43	intron11+3887	caaatatttggctctaatto C/T gcttccacctcagaaagcta	2065
CES1	44	intron12+2311	gcgccttggcactctcact G/A tgcactgttaggcgccttgc	2066
CES1	45	intron12+2331	gtgcatgcttagggccttg C/G ggcctctgttttttcagaa	2067
CES1	46	3'flanking+71	aacggtgagtaaaagagcga T/C gtgagaaggaaagtgcttt	2068
CES1	47	3'flanking+362	ttgcatggcacttactgacc G/A ttgcacaggcctgcaacacc	2069
CES1	48	3'flanking+581	atttctggattctgttagta C/T gtgaaagctctaaagcatg	2070
CES1	49	3'flanking+1348	aaatctgctgctggagaga G/C agcaagcatgcagatcaac	2071
ABCB4	33	intron22+767	acagtggctgatgcataga A/A cctgtagoaatccaccagaa	2072
AADA	23	intron2+46	tgtaactgaggtatgtcga A/G acattttactaagttcttcag	2073
AADA	24	3'flanking+208	aatgctaaaaaaasaaaaa A/A tcaactgtgtactttggga	2074
ABCA4	1	5'flanking - 1005	tgccatcataagcagaaact A/C tctctctcttcttggagct	2075
ABCA4	2	5'flanking - 819	gtctagagctcttcaagag A/T acacattctgagatttgagg	2076
ABCA4	3	5'flanking - 680	agcaacacccattgcagg G/A tggatgacagtaattggcc	2077
ABCA4	4	intron1 + 208	tgcccttccaggaaagatgt G/A ttctctgtcctcagccaca	2078
ABCA4	5	intron1 + 234	ctgtctcagccacatgaaa A/G tcttttgctacccgtgcctg	2079
ABCA4	6	intron1 + 510	agctcagcatcaagtcacag T/C ttaactggacacattattt	2080
ABCA4	7	intron1 + 1527	gottaacaacacagcataaaa G/A agagcagcatgggacacgct	2081
ABCA4	8	intron1 + 2077	caggactgtagctgctggcc T/C aaatgagccattcctgtg	2082
ABCA4	9	intron1 + 2174	ccctctcaatctggccttcc G/C ctggcatgggtggcgactc	2083
ABCA4	10	intron1 + 2246	gtccccaggagatggagcc A/G ctgggctggggccttgcc	2084
ABCA4	11	intron1 + 2364	ttctgtctggcagccctccc G/A atggotccccacctgtacc	2085
ABCA4	12	intron1 + 4243	ctccctgggtatgcctgta C/G gcagttaaagcgtcaaggaca	2086
ABCA4	13	intron1 + 4287	atgcgcctctgggaggaga A/C gctgagcatgattttgaag	2087
ABCA4	14	intron1 + 4309	ctgagcatgattttgaagc C/T ggcagaagaggctatttgta	2088
ABCA4	15	intron1 + 4416	tgacgcaacccgccccccc C/T ccgcaaaaacaaacacact	2089
ABCA4	16	intron1 + 4996	tttaccctggaaacaggcag G/A ccaagctggctgtcccctc	2090
ABCA4	17	intron1 + 5007	aacaggcagggcaagctgga T/C ggtccctccctgatacaca	2091
ABCA4	18	intron1 + 5080	gtgtggtctgtttcttag C/G aagcaccatggttccaagtt	2092



遺伝子名	No.	存在位置	配列	配列番号
ABCA4	19	intron1 + 5152	ggagatgaacgaagtga G/A ggcaggcctacaagttgca	2093
ABCA4	20	intron1 + 7110	ccactggatctgttttga A/G tcaagagtccttaagctcca	2094
ABCA4	21	intron1 + 7290	gatttttggcttttga T/A ggcacacagtcattttatca	2095
ABCA4	22	intron1 + 7483	tctgagcctcttcttaac T/C gcagagtgagtgctacaga	2096
ABCA4	23	intron1 + 7497	cttaactgcagagtgagtg C/T tacagagaaatcttactac	2097
ABCA4	24	intron2 + 1067	tcaagcagcagcaactg C/A gtggagtcttctgaactaa	2098
ABCA4	25	intron2 + 1108	aacactctatgccctctc G/A gcacaaaatgacgtgtcccc	2099
ABCA4	26	intron2 + 1119	ccctctggcacaanaatgac G/A gtccccctgttccccct	2100
ABCA4	27	intron2 + 1243	caccagcacagggactggc A/T cacatgagatgctcctgctt	2101
ABCA4	28	intron3 + 26	tgttgagatccctaccatgc A/G ggggaggagttgcacccc	2102
ABCA4	29	intron3 + 101	agcatggagcactgagttt C/T ttgtgctttgctgagcccc	2103
ABCA4	30	intron3 + 330	tcttgggtggagtgatca T/C ttagggagaaaaotcagtt	2104
ABCA4	31	intron3 + 470	tgaatcaggtttacaagt C/G aagttaacttcttggagaa	2105
ABCA4	32	intron3 + 634	tgaaaacccatgacccctct T/C ccaagaaaaatggccacata	2106
ABCA4	33	intron3 + 1016	ccttggggagctcagtag A/G tcttccaggagaagcctgc	2107
ABCA4	34	intron3 + 1554	gaaagtgggtttcatgttt T/C gcactcacattatgagtgaa	2108
ABCA4	35	intron3 + 1686	ctagacattctcacagagcc A/G agggcagcaggggggctc	2109
ABCA4	36	intron3 + 1823	ttcacctctctccatggacc A/G gtctccccctctcctcaatg	2110
ABCA4	37	intron3 + 1938	caaatctctgggaacaaac G/A ggttgaccagctttatct	2111
ABCA4	38	intron3 + 1951	acaatcgggttgaccagc T/G ttattctcctgtccatca	2112
ABCA4	39	intron3 + 2063	gctgtcagagcctaccctgc G/T tgaatgggtggaaggcagg	2113
ABCA4	40	intron3 + 2079	ctgcgtgaatgggtggaagg G/A caggtctcagagaattgggt	2114
ABCA4	41	intron3 + 2186	agacacacagagcatggac C/T gagaggcagcagacccctgc	2115
ABCA4	42	intron3 + 2214	gagcagaccctgcaaaaact G/A ggagactgcatagctgctc	2116
ABCA4	43	intron4 + 2717	cgtgctctgcacagccacc T/C gggaggtatgcccaggtt	2117
ABCA4	44	intron4 + 2802	attctcagcaggaggtta A/G tggtaaaagcccaggaatgg	2118
ABCA4	45	intron4 + 3182	ccccagagccacagcagcc C/G tgtctctgggtgttctgt	2119
ABCA4	46	intron4 + 3515	agtataataaagcaggagc C/T atagcccccaactcacaaga	2120
ABCA4	47	intron4 + 3907	agggagtgacagtgggac C/A actctcaggggaacccattac	2121
ABCA4	48	intron4 + 3923	gcacacactctcagggaccc A/G ttaactgagagaagccact	2122
ABCA4	49	intron4 + 3952	agagaagccactgtccact G/C tgggtggaacttcaagacc	2123
ABCA4	50	intron4 + 4125	ggctgtcagcagcacaggg C/A aggcctcttgaccactgggg	2124
ABCA4	51	intron4 + 4637	aatcacttggcccaaggtca C/T cttaactgttaggtttctt	2125
ABCA4	52	intron4 + 5319	acctatagggtctccagag A/G ccccaagaacagaaccttcc	2126
ABCA4	53	intron6 + 2266	caccctgcagacctcagac G/A ggtcctggggcttctgttcc	2127
ABCA4	54	intron6 + 2857	ccagaggagaaagctctgco G/A tagtggcctcagtttaacca	2128
ABCA4	55	intron6 + 2861	aggagaaagctctgacctag T/C cggcctcagtttaaccacga	2129
ABCA4	56	intron6 + 3078	gcaggcattaaatggact T/G tgcctttattgtctcctgggc	2130
ABCA4	57	intron6 + 3375	ttaaatgccaaatgattct C/G attacaagaagaggaggaa	2131
ABCA4	58	intron6 + 3412	ggaaatctcagtaaacac C/T gtacggcatctaccacatt	2132
ABCA4	59	intron6 + 4635	ctttcgggtggtattgcta C/T gtcaagtgtctgggaaagcc	2133
ABCA4	60	intron6 + 5576	ccactaatatgcattcttta G/C taaggggtctcaatatacac	2134
ABCA4	61	intron6 + 5925	aaaagcattttgtctttat A/G aaagcacagcctcttttag	2135
ABCA4	62	intron6 + 5916	cccagacaacccaagcagag A/G cctcttagggccggaaatcat	2136
ABCA4	63	intron6 + 6993	agcacaggatcaaggcctaa A/G ggccttagactgacctca	2137
ABCA4	64	intron6 + 7242	ttgccattttgactgtgac T/C tttttccagaaatagttt	2138
ABCA4	65	intron6 + 7454	atggagggtcctccctgggac T/C aggcagtattcagagatgta	2139
ABCA4	66	intron6 - 264	aaacgcgaattagaatcact T/C tgaatagttagatattta	2140
ABCA4	67	intron6 - 86	aggaggggggagttttcaa A/G catataggagatcagactgt	2141
ABCA4	68	intron6 - 32	tatacctacaacatatata T/C atttaaaaaatttttact	2142
ABCA4	69	intron7 + 828	gatgtgggaagttagagaa G/C agcccatgttactaatgtc	2143
ABCA4	70	intron7 + 1019	aggcttctgactgtctaga T/C agcaagtctaatcatttgc	2144
ABCA4	71	intron8 + 374	gtaaacacgggtgtggatg C/T ttttcaaacacaatatcgt	2145
ABCA4	72	intron8 + 874	tgtagagctgttattgtg G/A ggtacagccttataatttag	2146
ABCA4	73	intron9 + 505	tgtgtctctgtctgtct C/T tgtctgttttaggccaact	2147
ABCA4	74	exon10 + 1268	aacttttgaagaactggaac G/A cgttaggaagtgtgcaaac	2148
ABCA4	75	exon10 + 1269	aacttttgaagaactggaac C/T gttaggaagtgtgcaaac	2149
ABCA4	76	intron11 + 5236	ggcctggcagatgaaata C/T tattcagagttcacagtga	2150
ABCA4	77	intron11 + 5270	cagtgattttcatttcata A/G tatatttgatttcaggtct	2151
ABCA4	78	intron11 + 5687	atcatgtaagtactttaga C/G tcagatatataaatattgt	2152

遺伝子名	No.	存在位置	配列	配列番号
ABCA4	79	intron11 + 7136	gacttcccaacttacccttag T/C ggagctgtagtcacatagaa	2153
ABCA4	80	intron11 + 7180	acgctcataaatgcttctct G/A ggcgttaaagggtgaattt	2154
ABCA4	81	intron11 + 7701	gttagacgcaggcattacct C/T gtggctttgccccagtgga	2155
ABCA4	82	intron11 + 8073	gggatgtttgccacatcca T/C tggcatttctcaaaaggaac	2156
ABCA4	83	intron11 + 8586	cagctgcctgcgtggagag G/A gctcaaacotottocggcag	2157
ABCA4	84	intron11 + 8893	agccaaagtgccttgaact C/T ctttccactagtgtgct	2158
ABCA4	85	intron11 + 9257	gaatgaggtcacttgcgtca T/A ggcaggtggcttcccatga	2159
ABCA4	86	intron11 + 11234	cccaataattttttttt G/A ttttaggaattaaattcag	2160
ABCA4	87	intron11 + 11641	aagaacaacattattga C/G aacttttgggtgtgacctg	2161
ABCA4	88	intron11 + 11808	tgtatttttaagaata C/T caattccatttcttttaac	2162
ABCA4	89	intron11 + 11923	aagatcattattaatctc A/G tcagctgtgtcacttaag	2163
ABCA4	90	intron11 + 12055	tgagaaattacatgggac C/G gcccagggcatggagct	2164
ABCA4	91	intron12 + 305	tcacccctgtgtcgggaggt G/A tgaatagctatccaagccc	2165
ABCA4	92	intron13 + 1461	ttgggttccagtgcagct G/A tagctgtctactcagatccc	2166
ABCA4	93	intron14 + 1237	aaggccaccacaagtctaa G/A gatgagggagagctgagc	2167
ABCA4	94	intron14 + 1268	ggagctgagcccttgcct T/C atctagggttccctgttct	2168
ABCA4	95	intron14 + 1309	ttccatccctcagctgct T/C ctttccagttaccaatg	2169
ABCA4	96	intron14 + 2979	tcacctgtgtggtagcaaa C/T ctcagaaaatcaagtataga	2170
ABCA4	97	intron17 + 23	gagtccttttaaacacaaat C/G ttaatgtttgaaatcaact	2171
ABCA4	98	intron17 + 204	tgtgggcccctgtgtatca T/G gaatggctgcatcgtatga	2172
ABCA4	99	intron17 + 715	gggactcccctagagctgaa G/A tactctccatctgtttgtt	2173
ABCA4	100	intron18 + 1282	ggagatgagaacctaagc C/T gttccagaattcatgagg	2174
ABCA4	101	intron18 + 1531	gtctaccccttagaccatt G/A taagatcattggagtaat	2175
ABCA4	102	intron19 + 1802	actgtacccagggggcaa C/A gctcagctcagtcgccgaa	2176
ABCA4	103	intron20 - 195	acagatttttccattgtatg C/A atgaactatgtaagccatcc	2177
ABCA4	104	intron23 + 755	ctggctgcctcgggtttc C/T tatgtccatccacggggagg	2178
ABCA4	105	intron26 + 497	ctgggttagctatagatgg G/A acacttggatgaatgagga	2179
ABCA4	106	intron26 + 702	tatcaaatatacactcagagc T/G cagtcctcggcccttga	2180
ABCA4	107	intron27 + 156	cctgcttccaaacccctat C/T ttgattcttgtaaacatgaa	2181
ABCA4	108	intron27 + 385	tttaagaacagtgagtcac G/A tgacttgccttttgaatgc	2182
ABCA4	109	intron28 + 299	gacatgccatcagaccactg C/T gagtgttcaggcagccatcc	2183
ABCA4	110	intron29 + 168	ctccttccacacttgtgtgc A/G gggacattcactaccctca	2184
ABCA4	111	intron29 + 497	gctgtcaataaggacaaaa C/T agactaatttcaaatcttc	2185
ABCA4	112	intron29 + 567	agctgtcaggataaaaaagg G/A agacaaaacgatccacaagc	2186
ABCA4	113	intron29 + 577	aataaaaaggagacaaaa C/A atccacaagctagagatggt	2187
ABCA4	114	intron30 - 2494	aatcacagctcactgtgtgc A/G tcattagggatoccaaaagaa	2188
ABCA4	115	intron30 - 2169	aatgtacagccaaagtctt A/G gaaaaaggcagccagttcc	2189
ABCA4	116	intron31 + 535	ctaactgtgaattatcatct T/G tcatcactgcctttgagat	2190
ABCA4	117	intron31 + 957	gagttctcagcagcaatct C/A cagtatgaattttgattt	2191
ABCA4	118	intron32 + 445	tcacagagtttagaacctca C/T caagtggactctaggagcc	2192
ABCA4	119	intron33 + 48	aggatttttgaactgctaa C/T taccatgaatgagaaactct	2193
ABCA4	120	intron35 + 129	tgtttagtccagccatatg A/G acatccgactttcaataag	2194
ABCA4	121	intron35 + 209	tctcccaacatttatgtgg C/A aagtaagtttacattgtt	2195
ABCA4	122	intron36 + 3209	ttgagccctccacacccac G/A gcaggttggccctgaggaa	2196
ABCA4	123	intron36 + 3542	cttggcaggaggtagggca T/C ggggtgggttaggaggacta	2197
ABCA4	124	intron37 + 304	ctgggggcagccattcccca A/G cccctcaccagctctgaact	2198
ABCA4	125	intron37 + 525	taaatttgaatgagtaatto A/G tccatctcggcctcagtttc	2199
ABCA4	126	intron37 + 766	tgttgcaggctggagaaccc T/G cctatgaattgtacagggct	2200
ABCA4	127	intron37 + 856	aaaccccatgaagtgttca A/G ggcaggcatcattatctcca	2201
ABCA4	128	intron38 + 62	tagtagagtatgtttgttc G/A agcagagccaggggcaagca	2202
ABCA4	129	intron38 + 761	tcottggcgaagttaattct G/A atgaagagactgggtgttct	2203
ABCA4	130	intron38 + 1315	cagagtcagactctggaaag G/T cgggggataagaacacagc	2204
ABCA4	131	intron38 + 1316	agagtcagactctggaaag C/A ggggggataagaacacagcc	2205
ABCA4	132	intron38 + 1526	ccaacatttctaagcacc C/A ccttcaaaaacctgtattt	2206
ABCA4	133	intron38 + 1561	gtattttcatgtaattatc C/A gatacacagctgctatgaa	2207
ABCA4	134	intron38 + 1562	tattttcatgtaattatcc G/A atacacagctgctatggaaa	2208
ABCA4	135	intron38 + 1674	ccagctgaacacacagctgc G/A ggtgtgtgctgataaaca	2209
ABCA4	136	intron38 + 2867	tgcctgctagacaaagggg A/C agctcccggccactagaaac	2210
ABCA4	137	intron38 + 2874	ctagacaaaggggagctcc C/T gccactagaacactgcagg	2211
ABCA4	138	intron39 + 123	gaggggaccttgttggctg G/A aggtgtcctgccagctggag	2212

遺伝子名	No.	存在位置	配列	配列番号
ABCA4	139	intron40 + 1904	gacactgtacagccagccca A/C tootgaccccttttctcat	2213
ABCA4	140	exon41 + 5814	ggaaataaaactgacatctt A/G aggtcatatgaactaaccaa	2214
ABCA4	141	intron41 + 122	atttggttccagcttttatg T/G aggtcatatccctgtgtt	2215
ABCA4	142	intron41 + 287	tctgcagagcatgggtcagc C/T tgcagatgtctcagtactca	2216
ABCA4	143	intron41 + 411	cctcttccctcctgtctct C/A accctgtctcagttctcagt	2217
ABCA4	144	intron41 + 443	gttctcagtcctgtttctt G/A tatctgtcagatttatccag	2218
ABCA4	145	exon42 + 5844	cgtatctgtcagatttatcc A/G ggcacctccagcccgacgt	2219
ABCA4	146	intron43 + 328	ttgtagcctatctctatca A/G aatgcacattgtctccat	2220
ABCA4	147	intron43 + 345	taaaaatgcacattgtctt G/G cattacctccctccacacat	2221
ABCA4	148	intron43 + 370	acctccctccacacattttt A/G caaaacgtttcaggggttt	2222
ABCA4	149	intron43 + 376	ctccacacatttttcaaaa G/T gtttcagggagtttactgag	2223
ABCA4	150	intron43 + 670	ttaacagactgttcccta T/C gggcagagacagagagatga	2224
ABCA4	151	intron43 + 701	ggaggaatgagctctcactc A/G tctgctcttttctgtctgc	2225
ABCA4	152	intron43 + 822	gttaggtgtctgtacatct G/A tccagcatctgttgaotgg	2226
ABCA4	153	intron43 + 915	ggcagagcagctcctgagca C/T gcttcaotggtctcagacag	2227
ABCA4	154	intron43 + 1242	actgagctggacgtagaaa G/T aaactataggttaagacac	2228
ABCA4	155	intron43 + 1671	taggaagtcttacttccatc G/A ggcacatgtcatctttcta	2229
ABCA4	156	intron43 + 2036	ttgaaggatctcagtaatt G/A cttttttcttgcagtattt	2230
ABCA4	157	intron45 + 176	gtgtttgttcacacagctc G/T ggagaaaaaacagtcacggc	2231
ABCA4	158	intron45 + 193	ctccaggagaaaaaacagtc C/T ggcacagccttgacttggga	2232
ABCA4	159	intron47 + 238	cccaagctctgtgtgtggc G/G tctgtcaggtatgcatgag	2233
ABCA4	160	intron47 + 269	atgcatgcagagcctggctg G/A gatgaggagggctgtacc	2234
ABCA4	161	intron47 + 326	accattatctcaacagatc G/G gggacctgtggcctatttac	2235
ABCA4	162	intron47 + 715	aagtcaactaagctgtgtgt G/A ggaggaaacagcacataacc	2236
ABCA4	163	intron47 + 734	tgggaggaacagcacataac G/T cacttatactatgtgaggt	2237
ABCA4	164	intron47 + 931	ggacactgcatagatata T/C agaaatagcagcatgtcagg	2238
ABCA4	165	intron47 + 1260	acactctctgtgtgaccatc A/C ctatccaaagagaggtaac	2239
ABCA4	166	intron48 + 1663	tctcgtctcttcttaccctc T/C aggtgtttgttaatttgc	2240
ABCA4	167	intron49 + 127	agagagocccaccacacca C/T ggtccctaccaagtcccccac	2241
ABCA4	168	intron49 - 1545	gcagtttaattccaaactttt C/A tccctatttgatgagatca	2242
ABCA4	169	5'flanking - (1441-1400)	gtaactctcagttgaatcag (TCA)14-16 attttcagctgtgttccctg	2243
ABCA4	170	intron1 + (4712-4720)	gaggggcggggactataggc (A)8-10 cagcctaattcaagatgag	2244
ABCA4	171	intron1 + (7295-7304)	ttgttggtttggaatggt CACAGTCAT/Δ ttattcactc	2245
ABCA4	172	intron2 + (951-952)	attcattcac	2246
ABCA4	173	intron3 + (2642-2653)	cctgtccatcagactcttct TT/Δ acctctcccgaggagoccca	2247
ABCA4	174	intron4 + 5202	cctgggtgcagagcagat (A)10-12 tagcatgatatatttct	2248
ABCA4	175	intron6 + (3029-3044)	cacaaagcatctgacacccc C/Δ atccagcctgtgtaacttt	2249
ABCA4	176	intron6 + (5138-5139)	caactaaaaacaaatttac (A)16-18 cctgaagaattgcaggca	2250
ABCA4	176	intron6 + (5138-5139)	ttcatgacagatcagatgtt (G) cttttatggtttacaaaga	2251
ABCA4	177	intron6 + 5985	ttcatgacagatcagatgtt cttttatggtttacaaaga	2252
ABCA4	178	intron6 + 6094	tttccttctttaaaccoccc C/Δ agactaggagaaggtctgtc	2253
ABCA4	179	intron6 - 161	gggacggacagaaagagcc T/Δ agtttctgttgaccaaga	2254
ABCA4	180	intron7 + (809-810)	tattttttcaatttaataa A/Δ gattttttgtttctaaag	2255
ABCA4	180	intron7 + (809-810)	gggcccagatgcacactga (TG) tgtgggaaagttagagaaga	2256
ABCA4	181	intron8 + (472-484)	gggcccagatgcacactga tgtgggaaagttagagaaga	2257
ABCA4	182	intron9 + (48-71)	atcttcccaccttttacta (T)10-13 ggtcttctatgggtaagg	2258
ABCA4	183	intron9 + 554	gtaccctggacccctccagaa (GT)11-13 gagagagatgtgccttctg	2259
ABCA4	184	intron10 + 11	ataggggcagaaaagacaca A/Δ ccaaaagtctctctcactt	2260
ABCA4	185	intron11 + 4242	catgatcagagtaaggggg G/Δ ttgaggatggggggggag	2261
ABCA4	186	intron11 + (13743-13753)	ggagaggaatgatgttagt G/Δ cctcctgtaattggcccg	2262
ABCA4	187	intron13 + (636-637)	tgctctttttgtggtaatgg (T)9-11 cctctccaggaagaagaaa	2263
ABCA4	187	intron13 + (636-637)	cggggtggaggttggggg (G) ctcatgttcattatagatg	2264
ABCA4	188	intron18 + (569-570)	cggggtggaggttggggg ctcatgttcattatagatg	2265
ABCA4	189	intron20 - (304-297)	tgctgcctcatcttctctc TT/Δ aaactagtctgtatttctc	2266
ABCA4	190	intron22 + (1236-1246)	tataacctgacttlttttc (A)7-9 ggattgttttttaacata	2267
ABCA4	191	intron26 + (4626-4635)	gctgaattagtctccctggg (T)9-11 agttaactcctgattttgc	2268
ABCA4	192	intron33 + (115-116)	gataatcaatctgtgaagg (A)9-10 tggcattagagatccagacc	2269
ABCA4	193	intron36 + 1078	taaaacgctctgtttgtt GT/Δ ttacatgtttttggggccc	2270
ABCA4	194	intron37 + (290-291)	taagcagctatcaccttaaca A/Δ tacaacacagagattatca	2271
ABCA4	194	intron37 + (290-291)	ccttgacaaaagcctgggg (T) cagcattcccaaccctc	2271

遺伝子名	№	存在位置	配列	配列番号
ABCA4	184	intron37 + (290-291)	ccttgacaaagcgctgggg cagcatttcccacccctc	2272
ABCA4	185	intron38 + 898	atataaagggtggaaaaa A/Δ gaggcgctgtctgagxo	2273
ABCA4	196	intron38 + (1209-1210)	gtggacccctgagctgact GT/Δ ttccagctgttttagatt	2274
ABCA4	197	intron38 + 1322	actctggaaagcgctggg G/Δ ataaagacacagccagca	2275
ABCA4	198	intron38 + 3107	ggcccccacctcgtgaag A/Δ gggaggttggatttgcctc	2276
ABCA4	199	intron40 + 152	tttttccataatacaagt A/Δ ggggtcgggttaaaatag	2277
ABCA4	200	intron43 + 330	tgtagctatttccataaaa A/Δ tgcacattcttccacata	2278
ABCA4	201	intron43 + 1354	ttaagcttgcgcctcag G/Δ ttgtatgcttttgcctta	2279
ABCA4	202	intron47 + (1305-1308)	ctctctgttgaagggag AAG/Δ cccatgtgcccagcccta	2280
ABCA7	1	5'flanking - 1598	agatgtttggccccctcc G/T tctgcatctcttgcagag	2281
ABCA7	2	5'flanking - 1594	aattttgccccctccct G/T ctgcatctcttgcagagcc	2282
ABCA7	3	5'flanking - 1180	ggccgtgtgtgacggcag G/A tgcacaaatagcagctgc	2283
ABCA7	4	5'flanking - 480	agagctgggtgtgtccctc A/G gttggcgaactgtctctc	2284
ABCA7	5	5' untranslated - 9	ctctgtcccttccccctc G/G gtccacacatggcctttgg	2285
ABCA7	6	intron5 + 81	ccctgggcccagacctcc G/A ttccagcatccagctgtc	2286
ABCA7	7	exon6 + 583	ccgtttcttctctcctg A/G ggcctgtgctccagctatc	2287
ABCA7	8	intron8 + 103	ctccgtgtgtccaggaact A/G ttgagagataggcttgc	2288
ABCA7	9	intron8 + 166	tgcggagatcagagccca G/T ccaggcagagagagagag	2289
ABCA7	10	exon9 + 955	accggccttctgaggtctc A/G cctctgtggagatctccg	2290
ABCA7	11	intron9 + 421	tttttttttttttttttt T/A taagagatgagcttccctc	2291
ABCA7	12	intron9 + 483	gttgcacagctgagctca G/A tggcgagcttgcctcaact	2292
ABCA7	13	intron9 + 467	ccaggtctgagctgagct G/T gaggcttggcttccctcaa	2293
ABCA7	14	intron9 + 488	ggagctgtgtcactctg G/T ctctgtgtgtgtgtgtgt	2294
ABCA7	15	exon10 + 1184	gttgcacagctgagctgag A/G actgtgtgtgtgtgtgt	2295
ABCA7	16	intron10 + 10	gagtcagctgagctgagct T/C gtccacatgagctgtgtt	2296
ABCA7	17	exon11 + 1388	ccttggccccccagctgc G/A catcaaatccagctgaca	2297
ABCA7	18	intron12 + 115	caggtgtggaactttgcac T/G ttacacaaatccagctgac	2298
ABCA7	19	exon13 + 1824	cccttctctctcagcgcc G/G ctgtgtgtgtgtgtgtca	2299
ABCA7	20	intron13 + 55	gttgcctgtgtgtgtgtgt A/G caggtgtgtgtgtgtgtgt	2300
ABCA7	21	intron13 + 78	ggagctgtgtgtgtgtgt G/A gtgtgtgtgtgtgtgtgt	2301
ABCA7	22	exon14 + 1851	gttgcctgtgtgtgtgtgt A/G ggtgtgtgtgtgtgtgt	2302
ABCA7	23	exon15 + 2153	cgaggtgtgtgtgtgtgt A/C gttgtgtgtgtgtgtgtgt	2303
ABCA7	24	intron15 + 34	gttgcctgtgtgtgtgtgt G/G ggtgtgtgtgtgtgtgt	2304
ABCA7	25	intron16 + 8	ctgagccccagctgtgtgt A/C ctacaggtgtgtgtgtgt	2305
ABCA7	26	intron18 + 181	ttccagctgtgtgtgtgt G/T ggtgtgtgtgtgtgtgtgt	2306
ABCA7	27	exon17 + 2385	ttccacactgtgtgtgtgt G/A gtgtgtgtgtgtgtgtgt	2307
ABCA7	28	exon17 + 2421	ccggctgtgtgtgtgtgt G/A tctgtgtgtgtgtgtgtgt	2308
ABCA7	29	intron20 + 168	cgagagctgtgtgtgtgt A/G tggcagaggttcccttga	2309
ABCA7	30	exon21 + 3027	ctctgtgtgtgtgtgtgt G/T ggtgtgtgtgtgtgtgtgt	2310
ABCA7	31	intron22 + 1388	ggatgtgtgtgtgtgtgt G/T tctgtgtgtgtgtgtgtgt	2311
ABCA7	32	exon23 + 3417	ggatgtgtgtgtgtgtgt G/G ggtgtgtgtgtgtgtgtgt	2312
ABCA7	33	intron23 + 147	gggtgtgtgtgtgtgtgt G/A tctgtgtgtgtgtgtgtgt	2313
ABCA7	34	exon25 + 3528	gttgtgtgtgtgtgtgtgt A/G ggtgtgtgtgtgtgtgtgt	2314
ABCA7	35	exon29 + 4048	ccagctgtgtgtgtgtgt G/A ggtgtgtgtgtgtgtgtgt	2315
ABCA7	36	intron30 + 81	ccctgtgtgtgtgtgtgt G/A cccctgtgtgtgtgtgtgt	2316
ABCA7	37	exon31 + 4239	ctctgtgtgtgtgtgtgt A/G tgggtgtgtgtgtgtgtgt	2317
ABCA7	38	intron32 + 1	cgaggtgtgtgtgtgtgt G/D tgggtgtgtgtgtgtgtgt	2318
ABCA7	39	intron33 + 54	ccctgtgtgtgtgtgtgt G/A tctgtgtgtgtgtgtgtgt	2319
ABCA7	40	intron34 + 245	cagctgtgtgtgtgtgtgt G/A caggtgtgtgtgtgtgtgt	2320
ABCA7	41	exon36 + 5057	gttgtgtgtgtgtgtgtgt A/G ggtgtgtgtgtgtgtgtgt	2321
ABCA7	42	intron38 + 85	gttgcactgtgtgtgtgtgt A/G ggtgtgtgtgtgtgtgtgt	2322
ABCA7	43	intron40 + 184	cttgcactgtgtgtgtgtgt G/G caggtgtgtgtgtgtgtgt	2323
ABCA7	44	intron40 + 277	ctgagccccagctgtgtgt T/C cccagctgtgtgtgtgtgt	2324
ABCA7	45	exon41 + 5592	gttgcactgtgtgtgtgtgt G/C ggtgtgtgtgtgtgtgtgt	2325
ABCA7	46	intron41 + 288	ctcctgtgtgtgtgtgtgt T/C ggtgtgtgtgtgtgtgtgt	2326
ABCA7	47	intron41 + 389	tgtgtgtgtgtgtgtgtgt G/T ggtgtgtgtgtgtgtgtgt	2327
ABCA7	48	intron41 + 591	ccactgtgtgtgtgtgtgt G/T accctgtgtgtgtgtgtgt	2328
ABCA7	49	intron41 + 594	atgtgtgtgtgtgtgtgtgt G/T cctgtgtgtgtgtgtgtgt	2329
ABCA7	50	intron41 + 998	tgtgtgtgtgtgtgtgtgt G/G caggtgtgtgtgtgtgtgt	2330
ABCA7	51	intron41 + 1001	ccctgtgtgtgtgtgtgtgt A/G ggtgtgtgtgtgtgtgtgt	2331

遺伝子名	No	存在位置	配列	配列番号
ABCA7	52	intron41 + 1051	actcatgtctggtccaccca G/T accatgccccccccatag	2332
ABCA7	53	intron41 + 1131	tgccctgccccatgccatt A/G tgccctgctccacactcaa	2333
ABCA7	54	exon44 + 5985	gaagcgtctctctcgcgcct G/A gccatcatggtgaatggcg	2334
ABCA7	55	intron44 + 201	ggcgcaggaccaggagggt G/C agccggggctctctggtga	2335
ABCA7	56	intron44 + 233	ctgggtgatttagaagaca C/T aatcagggtgctgttgggt	2336
ABCA7	57	intron44 + 313	agttaggaggaggcctgatt A/G gggggggggccataggaaa	2337
ABCA7	58	intron44 + 337	ggcggggccataggaaagt G/C ggcgggggtattattgtgt	2338
ABCA7	59	exon45 + 6133	tggcgcccgagttccctggg G/T cggagctggcgaggcacet	2339
ABCA7	60	exon45 + 6159	ctgcgcaggcacatggagg C/T cgcctgcgttccagtgcc	2340
ABCA7	61	intron45 + 27	acggcgccgggtcgggtg G/C gggaggcgggctggggcca	2341
ABCA7	62	3'untranslated + 6580	aaggctggagagaagccgtg G/C tggtagaacctgtgtcatgt	2342
ABCA7	63	3'flanking + 108	caagctgagtgatcacatag G/A ggcgaagtggcgattcatag	2343
ABCA7	64	3'flanking + 376	cttacaggagcccgtgtcc C/T ggagcacaggccaggccgg	2344
ABCA7	65	3'flanking + 687	cagcaggagagcttggggg G/A ggggagagagtttaoaaactgc	2345
ABCA7	66	3'flanking + 688	agcaggagagacttggggag G/A gggagagagttcacactgcg	2346
ABCA7	67	3'flanking + 1169	cctcgacctgaccacactca C/T ggggtgaggggggggtgat	2347
ABCA7	68	intron9 + (398-422)	ctgcaactaccacgtcctgc (T)22-26 aagagatggagttcactct	2348
ABCA7	69	intron12 + (175-184)	ggggactctgaggtctgtt (G)8-10 actctgaggtctggggcc	2349
ABCA7	70	intron30 + (81-87)	cccccctggagctctcccg (C)6-7 gggcctcagctccctccc	2350
ABCA7	71	intron34 + (349-361)	agaaagagaaagagagaaag (A)12-14 cagaatgtgctttgggtga	2351
ABCG1	1	5'flanking - 1772	cctgggtctcagcaggggcc T/C cacacctgcaatgggtgcct	2352
ABCG1	2	5'flanking - 1754	cctcacacctgcaatgggtg C/T ctggggaggggtgcagatg	2353
ABCG1	3	5'flanking - 1450	tccaaagcccaagatttggtg T/C ttttgggtctcttttgaat	2354
ABCG1	4	intron1 + 4	ctgttggggagagaaagta G/A ggggggggctcttctgtgt	2355
ABCG1	5	intron1 + 576	agctcaggaggtgtctgaa C/T gccacacagtgcaggagttt	2356
ABCG1	6	intron1 + 1426	aattctccttctaaactaa A/G gaatatatttagaaaaat	2357
ABCG1	7	intron1 + 2342	agagcttgcgaatggcgcc G/A agggacctgccatgactca	2358
ABCG1	8	intron1 + 2399	gggggttgacagacaggat A/G tgtctgtgtgttccagctg	2359
ABCG1	9	intron1 + 2406	tgacagacaggatattctg G/G tgtgttcagctgtgtgtt	2360
ABCG1	10	intron1 + 2911	ccctctctgtgccactgtt G/C tcccaacaccagcctgttt	2361
ABCG1	11	intron1 + 4363	tatatagattcctagcaga A/G aacataatttgagaggaaac	2362
ABCG1	12	intron1 + 4752	gctttcagagcccattcaca C/T aagggtctcattttatagg	2363
ABCG1	13	intron1 + 5026	ccaggtctgtgggatttcag G/A ccaaaaaggagcgtgcaag	2364
ABCG1	14	intron1 + 5532	gggttaaatattccggcgag C/T gccaatgcagattatctga	2365
ABCG1	15	intron1 + 5681	gctaaagtgcattggaaggca T/C catgaataaactcctcagg	2366
ABCG1	16	intron1 + 6290	tcacagcagattcatgagag T/A tgaatgtttgcccacatg	2367
ABCG1	17	intron1 + 6386	agatgtctccctccagccag C/T acattttctccctgtgagca	2368
ABCG1	18	intron1 + 6758	acctgcattgtgggtgcccc C/G ctgcttctctactgtcctt	2369
ABCG1	19	intron1 + 7029	tgggtcagattaaatatatc C/T tgaaggactaaacgtaaaa	2370
ABCG1	20	intron1 + 7176	ttgtcacattgtgaaaaa C/G gcaaaaagatgggtttcag	2371
ABCG1	21	intron1 + 9243	gcctgagagcgtggcagta G/A gaaggctgcaggtgtggac	2372
ABCG1	22	intron1 + 11224	tctgttttagagaggaaaat G/A ggcagcatcattttgtcac	2373
ABCG1	23	intron1 + 11371	gggtctcttggagcccttt T/G tctctccagccctgctgt	2374
ABCG1	24	intron1 + 12420	ggggtctgaatctcaaac C/T ctgagctctgtgtttcccc	2375
ABCG1	25	intron1 + 12484	gagttgtctccaaagaaat G/T tttgtatgttcttttctg	2376
ABCG1	26	intron1 + 12955	ctgggttgggtggagccac A/G gtctcacacctattggcagg	2377
ABCG1	27	intron1 + 12985	ctatttggaggtctgaaaca T/C ttttcttgggtttgcaata	2378
ABCG1	28	intron1 + 20041	acatggccggtctcccttct T/C cctcggaatggcctggaatt	2379
ABCG1	29	intron1 + 20046	gocggcttccctcttctc G/A gaatggcctggaattcgatc	2380
ABCG1	30	intron1 + 21058	acaagactlagaatttgacc G/A tgattttaaactattctaa	2381
ABCG1	31	intron1 + 26189	ttcttggatgtgccatgca C/T gggggcaagggtttgtgag	2382
ABCG1	32	intron1 + 27453	atcatgtgtgtttggggaaa G/C ctggagcccaacttggtaca	2383
ABCG1	33	intron1 + 28098	caggagaggagacagctgctg G/C tgotgcttaggttagggc	2384
ABCG1	34	intron1 + 29670	ccttcagttgtaattaggag A/G aggagcgcaagaggagctg	2385
ABCG1	35	intron1 + 29810	attgtttctctgtttttt T/C tgtgttgaatttcccttaa	2386
ABCG1	36	intron1 + 36220	cagatcccttgggtgtggg C/T aggtataggagaggtttt	2387
ABCG1	37	intron1 + 36341	aaacagggttggtgctctcc G/A taaggagcaggagaccttcc	2388
ABCG1	38	intron1 + 36370	aggagaccttccacatcct G/A gcaagaattctctttttc	2389
ABCG1	39	intron1 + 36662	cagaataatgcacaaattct G/A gattgagctgactgtattga	2390
ABCG1	40	intron1 + 36914	tgtaaaagatggagaagaac A/G cagtagtcgttctgtgtgag	2391

遺伝子名	No.	存在位置	配列	配列番号
ABCG1	41	intron1 + 37029	tgagactcatggcctctgcc A/G gggagactgggctggccctgc	2392
ABCG1	42	intron4 + 1196	tgaaaagaaaatggtgagt G/A gaaaccaaagagagaaat	2393
ABCG1	43	intron4 + 1200	aagaaaatggatgagtgaa A/C ccaaaagagagaaatgtgg	2394
ABCG1	44	intron4 + 2041	aagcagaggctttccaccc G/A gagactcaagaagctgctcc	2395
ABCG1	45	intron4 + 2490	gtggtgaagttagctgagc A/T cacggggagccctccatcc	2396
ABCG1	46	intron4 + 2552	atggccttgggcactgct G/A ctgtgccccgagccagctt	2397
ABCG1	47	intron4 + 2822	cagcaggctcctgctgaag T/C cacagaaagcaggccottg	2398
ABCG1	48	intron4 + 2850	agccaggccctggcctgcc G/A gagctggaagaccagaaaca	2399
ABCG1	49	intron4 + 2919	gcctccacaggagtagotaca C/T gggacccgaaggcagatggc	2400
ABCG1	50	intron4 + 3506	ggcagcctgggctgcccaga T/C cctccctggagcggccgccg	2401
ABCG1	51	intron4 + 3538	cgcccgccggaaagccccag G/A ggggctggagctacaagtgg	2402
ABCG1	52	intron4 + 3554	ccagggggctggagctaca A/G gtggccttcaggtttttg	2403
ABCG1	53	intron4 + 3721	ccagctcatggcaggggtg C/T ggaggaaaggcaccacacag	2404
ABCG1	54	intron4 + 3852	caccagagcactcagtcgg C/T caagagcctgcccagtggt	2405
ABCG1	55	intron4 + 3921	gaagaccagcagtcgatgcc A/G gctgggaaggaggctctgcc	2406
ABCG1	56	intron4 + 3979	accaccagcctttccaga C/T agccttcagagctgttcc	2407
ABCG1	57	intron4 + 4291	gagocgtggagtaggtg G/A ctgtcatgctccacagggg	2408
ABCG1	58	intron4 + 4922	gaaccaccagaaattgtgc A/G tctctcatgtgtccattca	2409
ABCG1	59	intron4 + 4988	tattgaactggacacctctc C/T gtaggggacactgggctagg	2410
ABCG1	60	intron7 + 672	ctcagtaacgggtcactaac G/A gatgctgtagtggggcag	2411
ABCG1	61	intron7 + 840	atttcatttccctaatgtgc T/C ctgaccagagagcggaggt	2412
ABCG1	62	intron7 + 891	tggccactgttgagggtgt G/A ggtgaccagaggggctgga	2413
ABCG1	63	intron7 + 997	tgtgtcctgtttgtgtgctt C/G atctaggaggtgtgtggcc	2414
ABCG1	64	intron9 + 1616	ctggaggagaagaaggata A/C agtctaaagcgtgctgac	2415
ABCG1	65	intron9 + 1630	aggataaagtctaagacgtg C/T tgtcacagagttcagggtcc	2416
ABCG1	66	intron9 + 1674	gcttccaaaggcccatccg G/T gtgtgtctctgagccgaga	2417
ABCG1	67	intron9 + 1689	atccgggtgtgtctctgagc C/T gaggacggcttgogaaagc	2418
ABCG1	68	intron10 + 446	tggctgacagtgaacacagc G/A gctgcttctccagaaactta	2419
ABCG1	69	intron10 + 581	atgcagagatllcagaagagg C/G agactcaggaaagtaaggc	2420
ABCG1	70	intron13 + 243	accoggagagccatggcagg A/C coaagtattctgacgttgc	2421
ABCG1	71	3'untranslated + 2370	gcctctcagctgatgctgc A/G cagtcagatgtctgtgga	2422
ABCG1	72	3'flanking + 1124	ctcagaactacatcgagtg G/A gtcagtggtgaaacgccca	2423
ABCG1	73	3'flanking + 1252	atggggccacagccctgcc T/C cagaagcagcttggctcgc	2424
ABCG1	74	3'flanking + 1433	gggggaagcgttgggaacc A/G tgagggtctttagctgcaa	2425
ABCG1	75	3'flanking + 1513	tgaagggtgaactggagtag G/C tgaggattctgcagttgacg	2426
ABCG1	76	intron1 + (19909-19944)	ccgatgaggagggatggg ccaggcacagactctga TGAGGAGGGGAGGGGG)caccaggcagcagactctga	2427
ABCG1	77	intron1 + (19909-19944)	ccaggcacagactctga	2428
ABCG1	78	intron1 + (25136-25137)	catgaacttgctgaccata (G) cctgtgaggagctaggct	2429
ABCG1	79	intron1 + (25136-25137)	catgaacttgctgaccata cctgtgaggagctaggct	2430
ABCG2	1	intron1 + 152	tcatttgaagtggtgtgc G/A gtttaaaactgacagttcaa	2431
ABCG2	2	intron1 + 614	agctagtcatataaataac G/A ccagagttaggaagagaga	2432
ABCG2	3	intron1 + 10002	cctcatgaatggtatcatg T/A cccaacatctctttcgat	2433
ABCG2	4	intron1 + 10123	aaagtgttccttgggtgc G/A tataccaaatccctgcata	2434
ABCG2	5	intron1 + 10768	ataggaataattgagaaacg G/A gtctgaagaactctgcagga	2435
ABCG2	6	intron1 + 10791	ctgaagaactctgcaggaaa T/C gaaaatagttccctgctttt	2436
ABCG2	7	intron1 + 10792	tgaagaactctgcaggaaa G/A aaatagttccctgctttt	2437
ABCG2	8	intron1 + 14183	tcacttaaggtttgcagg T/G gtctaggacacagaagaga	2438
ABCG2	9	intron1 + 14934	aaagtgtcttttaaaattcc A/G tcttgagtcagtgagctatt	2439
ABCG2	10	intron1 + 14955	tcttgagtcagtgagctatt G/T aaattcaagcaataagttat	2440
ABCG2	11	intron1 + 17251	ctgtttgggaacagcaactc A/C atcataggcagagagaaagt	2441
ABCG2	12	intron1 + 17347	atttcaaacctgtttcaca G/A ttgttaagctcatcttaagg	2442
ABCG2	13	intron1 + 17626	gaaggtgcataacaactcc T/G acataaagctctgggctata	2443
ABCG2	14	intron1 + 18271	aaatgaagctgtctattgcc A/G cacatttaaaatggacttg	2444
ABCG2	15	intron1 + 18369	ctattgctttctgtctgca G/T aaagataaaaaactctccaga	2445
ABCG2	16	exon2 + 34	algtcgaagttttatccca G/A tgtcacaaggaaacaccaat	2446
ABCG2	17	intron2 + 36	tgtanaaaagacagotttta A/G tttaacctacagtgaacctca	2447
ABCG2	18	intron2 + 4230	caaccctaaattggaggcc C/T gggcgtggtgattgagaaag	2448
ABCG2	19	intron2 + 4518	gttgacagacttttatagt A/C gggacactgacctgcatgca	2449

遺伝子名	No.	存在位置	配列	配列番号
ABCG2	20	intron2 + 6278	atgtatgtaccacgtcttca T/C attcttaaaggatgacccta	2450
ABCG2	21	intron3 + 10	ggcaaatctctgtgagtata A/G gagagtataagtaagcgttt	2451
ABCG2	22	exon5 + 421	tgacgggtgagagaaaactta C/A agttctcagcagctcttcgg	2452
ABCG2	23	intron6 + 3158	actattctagttaattotag A/G ttgtcaatacaacacactga	2453
ABCG2	24	intron6 + 3203	tcctattctgttttaataaa A/G gcattgaatttaggttgot	2454
ABCG2	25	intron6 + 3287	gtcaggctgaactagagcaa A/G caatctaaggcaagaatag	2455
ABCG2	26	intron7 + 179	ttcatttttagcaccagc T/C tgttatttagtatctttct	2456
ABCG2	27	intron9 + 5677	gcacttgactttgctttgc T/C acatacttgacttctctgc	2457
ABCG2	28	intron9 + 5974	tatactaataaatgggtgt A/T taagttttatctctaattg	2458
ABCG2	29	intron10 + 1908	gacgcttatgtgcagcctat G/T ttgatgtctggaaggctga	2459
ABCG2	30	intron10 + 2094	ccctgagggtgaggtatct G/A gattatttcagacttgcta	2460
ABCG2	31	intron11 + 20	tgtgagtagtctttgtct A/G ggaacggggctgtccagcag	2461
ABCG2	32	intron11 + 1447	tgtttctcaaggaaagccccc C/T gtcaagaaggaaaagaagc	2462
ABCG2	33	intron12 + 49	etgttatttagtctgactat G/T ggtgaagtcagttgcacct	2463
ABCG2	34	intron12 + 1566	tatgcagttacatggaacga C/T acaacattggagaccgagg	2464
ABCG2	35	intron13 + 40	gcttgataagggaattgtt C/T ttctctcatttctctctgc	2465
ABCG2	36	intron13 + 1823	ttactcaagcaggcctgact C/T ttattttagtcttttttag	2466
ABCG2	37	intron14 + 497	ctaataaanaaanaaagaa T/C gaaagattgtcactgtaaat	2467
ABCG2	38	intron14 + 815	taactctttggaacttctt A/G aaatttaaaactgttaact	2468
ABCG2	39	intron15 + 110	ccaggggcactgaattttt C/T ggccttaagttttctctcc	2469
ABCG2	40	intron15 + 566	gccgcatagtctatgtttgt T/A gtttttaaatcaactggaa	2470
ABCG2	41	intron15 + 639	aacaagaacacttgtaataa G/A ttgagaaaaaacccogttt	2471
ABCG2	42	intron15 + 1197	tgagtagctgggattacagg C/T gccaccaccacacactgct	2472
ABCG2	43	intron16 + 520	catcaattcaggtcaagaaa T/C agaagattgtgacaceaaa	2473
ABCG2	44	5'flanking - (998-995)	gttggatggctacactcac TCAC/Δ aaagcctgatggccogttto	2474
ABCG2	45	intron13 + 405	ctgctagtatttttttt T/Δ aacatttttaattttatgtt	2475
ABCG2	46	intron13 + (692-702)	tcaatatgtttctgcttct (T)9-11 aatgttctctctctctaat	2476
ABCG2	47	intron15 + (645-650)	aaacacttgaataagtttag (A)7-8 cccgttttccataatgtt	2477
ABCG4	1	intron1 + 84	ggcctgggtgtccatgttc G/A gaaagtcctgcaaccagtg	2478
ABCG4	2	intron2 + 77	gaacacagaaggtattctga A/G agggcattgacccccatcct	2479
ABCG4	3	exon6 + 679	tgggtccctcatgaagtcc C/T tggcacagggggccgtacc	2480
ABCG4	4	intron7 + 95	ggcctcctagggtagagat C/T tcaccgtgctgctgcttccc	2481
ABCG4	5	intron7 + 158	cttgcccttgggaagtgt G/A tgaatcaaaactgagctctc	2482
ABCG4	6	intron8 + 106	cccagaggcattgcaacca A/G tgggtgctaggaagaaccta	2483
ABCG4	7	intron8 + 1089	aggtacacaaactaatgta C/G aagattctctgtagacctgg	2484
ABCG4	8	intron11 + 1113	acgtgagcagagataagta T/C ggtcatatggccaggagga	2485
ABCG4	9	intron11 + 1120	acgagataagtgatggtcat A/G tggccaggaggagagggac	2486
ABCG4	10	intron11 + 1173	gggggacagcctgaacaaga A/G tggaggcaggatggacac	2487
ABCG4	11	3'untranslated + 2758	gagtgacaggcacatcatg A/C gaacaggccatctcagccct	2488
ABCE1	1	5'flanking - 158	aactcagattctggcacc C/T cagcagctgcttgcaccaac	2489
ABCE1	2	intron9 + 237	ctgaattatagcaaat C/T gtgactttataggagcaga	2490
ABCE1	3	intron9 + 4203	ttgttaggaagctgatac T/G taattgacatagagatgt	2491
ABCE1	4	intron10 + 1811	ccaagaacttcagctttct C/T ttcaactaaataggaaac	2492
ABCE1	5	intron17 + 2301	atatccagaacagatgta T/C gtgcagaacaggtgtacag	2493
ABCE1	6	3'untranslated + 1810	tggatgattagactgactct G/C agaatttgataagccatt	2494
ABCE1	7	intron1 + (5349-5363)	ttgtctgggttggtggg (T)13-16 gagactgggtctgactctca	2495
ABCE1	8	intron1 + (5845-5854)	tacatttgtcaaaattata (T)9-10 gcagataatcattcatctc	2496
ABCE1	9	intron5 + (836-851)	taaattcacatgattctga (T)14-16 aggatctctgactggcag	2497
ABCE1	10	intron8 + (1153-1169)	tccttcaaaacttatattgc (T)13-17 catagttcatgtttgatga	2498
ABCE1	11	intron9 + (1023-1024)	ttgctctgtttcaaatctct (T) attaatgggcccagcagctcg	2499
ABCE1	11	intron9 + (1023-1024)	ttgctctgtttcaaatctct attaatgggcccagcagctcg	2500
ABCE1	12	intron9 + (2338-2346)	agtgtagatggacctcggg (A)8-9 ctagttaaggaaaagtata	2501
ABCE1	13	intron9 + (3213-3221)	ttcaattttcattgttac (T)8-9 ctggcagattactcctgaa	2502
ABCE1	14	intron10 + (284-299)	tcctctgactttggcttct GCAGTATTACTGTAGT/Δ atttg	2503
ABCE1	15	intron10 + (840-853)	tttttgggttctcttctt (T)13-14 aatcttgagggaatctttt	2504
ABCE1	16	intron16 + (1163-1172)	gattagaatccagggttaa (T)9-10 gttttgcacaaaaatattac	2505
ABCE1	17	intron16 + (1372-1382)	taaaatttaataaaattga (T)10-11 ctcttagtctcctcaaccctt	2506
CHST1	1	intron1 + 2475	taaatggagaaaataacacc G/A acctgatagcattgtgtga	2507
CHST1	2	intron1 + 2612	aaactcccaagcatgotca C/A ctatgccttaccctaggtc	2508



遺伝子名	No.	存在位置	配列	配列番号
CHST1	3	intron1 + 3900	gccctgcccccactccaga C/G ttccggccctccagcccctt	2509
CHST1	4	intron1 + 6520	cctccccagagggagctggg C/T acactggggccttggttgt	2510
CHST1	5	intron1 + 7534	attgtgtttggcatactgc T/G cacatggaaggatgctctag	2511
CHST1	6	intron1 + 7911	tttccctgggaagaaaaac G/A ccttgcctgtttatgcattt	2512
CHST1	7	intron1 + 7963	aaaacattcatgggggatta G/C tgcctgctacgtcagagtc	2513
CHST1	8	intron1 + 9173	ggcgtgccacagatcaggcc G/A aggtgggggacagaaatgcc	2514
CHST1	9	intron1 + 9701	cccagaattctgaatacagc A/G gcatgacgggactacgagg	2515
CHST1	10	intron1 + 12132	aacagatccacaggaccaga C/A agcaaggggaggaaacatgc	2516
CHST1	11	intron1 + 12465	atgcagggaaggggcttggc G/A caaaactgtcaactgagata	2517
CHST1	12	intron1 + 12561	atgcctccctggctcatttc G/A ctttgatttcaggtaactg	2518
CHST1	13	intron3 + 529	ccatggctgcaggggctct T/G catgctcagggtattgggt	2519
CHST1	14	intron3 + 617	agaggacagggaaaggga C/A cacctggagaactggcgcc	2520
CHST1	15	intron3 + 796	aaggagcttccagctgtc C/T gcaggtaaatcctggggg	2521
CHST1	16	intron3 + 818	caggtaaatcctgggggc A/G aggaatgttttcagctcc	2522
CHST1	17	3'flanking + 762	ataactggatcacagtttact G/C gtgtctacactggcagagaa	2523
CHST1	18	intron1 + 7874	gtttcccttgccttgcct T/Δ cattttcatccctcatttt	2524
CHST1	19	3'flanking + (335-349)	cacactgccacacctggcta (T)12-15 ggtttttagagagcgggg	2525
CHST3	1	5'untranslated - 294	tccagctgccgacccggccc C/G gcagcgcctccatccatccg	2526
CHST3	2	intron1 + 96	gcgtccaggcggcggcccca G/A actttgggggagagagggg	2527
CHST3	3	intron1 + 4467	agaggaagtggggcagago C/G ggagcagcagggggagtg	2528
CHST3	4	intron1 + 4853	ggatgagcaatgcccagctg A/G tccctgccacccctccacag	2529
CHST3	5	intron1 + 4965	tccactgcagaggggacaca G/C tgaccaggacgaaagtggg	2530
CHST3	6	intron1 + 5046	ggcgtgctcatttcttacc C/T ctggttccatcccatgtcct	2531
CHST3	7	intron1 + 5300	ccttttcttctaaaggct A/G aagagatgacagaaatgtgc	2532
CHST3	8	intron1 + 5354	agcgcgtgactccacagcg G/A ggtgtggggggccctggc	2533
CHST3	9	intron1 + 5428	gacacgcttcagccctctgt G/G tctattgcccaaatctggc	2534
CHST3	10	intron1 + 5621	ctgtggcttccctgggccc A/G ggaatttatcaatgaggt	2535
CHST3	11	intron1 + 6555	gagtggggcactgctggag G/G tctgttctctgctttgttc	2536
CHST3	12	intron1 + 6990	aaacacactgggcaacccc G/A tccccgactgtgactaac	2537
CHST3	13	intron1 + 7133	ctgagggcctgtctgcagg T/G ttgatgtgtgaagagccc	2538
CHST3	14	intron1 + 7161	gtctgaagggcccccagaa T/C agaaatctagaacctccag	2539
CHST3	15	intron1 + 7199	cagtcacgaagcagtgtaac C/T caccagagatgaagaactg	2540
CHST3	16	intron1 + 7316	cttgcattctgtgtaggtgc C/T tggggtagcgtgccagga	2541
CHST3	17	intron1 + 7967	gacaggaaccccccagag T/G gatgtctggccctgtgacct	2542
CHST3	18	intron1 + 11412	gcttgcaattctgattcatt C/T tgcagtcactggctcttgt	2543
CHST3	19	intron1 + 11591	ccctggaggccctcactgc G/A gtgactaattacnagcatg	2544
CHST3	20	intron1 + 12541	cccacacagcatgaatggg G/C ccagcccccagcctgccgct	2545
CHST3	21	intron1 + 12672	gtagccacagctggggctg G/C ggtcggggcatgccaagg	2546
CHST3	22	intron1 + 14809	ggatgtgtagggtttggct C/T ggccttaagggtgggtgga	2547
CHST3	23	intron1 + 16161	gatgtgtgtaggcatgtg G/A ttgggtctttaacaccacc	2548
CHST3	24	intron1 + 16385	tatttagcatgtgggttca A/C ctctctgttttcaaagg	2549
CHST3	25	intron1 + 33638	gaottggccacgtccttgg G/C catgaattctgtctatgtc	2550
CHST3	26	intron1 + 33878	agcaagaagtgtgtccccc C/T acagccccactcaggcataa	2551
CHST3	27	intron1 + 34690	agcacacatggagcttccc G/A cagtgggttcagcgctccc	2552
CHST3	28	intron1 + 35145	aggggaagccgaagcctcact T/C gctgggacttgccgtcc	2553
CHST3	29	intron1 + 35340	tgtgaagtgttccccacagt T/C ggtagccatggttcgaccg	2554
CHST3	30	intron1 + 35436	gcaactcatgtatggagcaa T/C tgcctttttcttctctt	2555
CHST3	31	intron1 + 36150	ccatagaagaggtgggct G/T aggaagccagggagcagga	2556
CHST3	32	intron1 + 36194	ggtgtggggagggcagcagg G/A gtgtgggctcagcggggag	2557
CHST3	33	intron1 + 36561	ctctggtgttgcgtcaat A/G tgcagagtgtggacaaaac	2558
CHST3	34	intron1 + 37602	ctggaacagcaactaaaaa A/T agaatagtccctggaggg	2559
CHST3	35	intron1 + 37725	gggtagccagggcagctccc C/T gaccgcacccctcttt	2560
CHST3	36	intron1 + 37734	gcagctcccgaccggca G/G ctgccttttcaaccctctcc	2561
CHST3	37	intron1 + 38208	gccattctagatgcgagtc C/T gactttgggtgcttgc	2562
CHST3	38	intron1 + 38219	cagtcgccactttggg T/C gcttgcattctgggaaggga	2563
CHST3	39	intron2 + 255	ctacagctgtaaaaggttag A/G caagatacttaacatttctg	2564
CHST3	40	3'untranslated + 2202	acacctcagaggagcctgtg C/A ttaacattttaggattatt	2565
CHST3	41	3'untranslated + 2569	aggcctcatctgggtagg G/G caagaggaaggtacagagt	2566
CHST3	42	3'untranslated + 2717	ctggaaatcctccttagggc C/T ctgggaaggtattgcttaa	2567
CHST3	43	3'untranslated + 2753	cttaacgcaggatgtgtgg G/A tgtttgtttcgggcttta	2568



遺伝子名	No.	存在位置	配列	配列番号
CHST3	44	3'untranslated + 2800	gcttgggtgttttcttctgtt C/T atggctgtgttttctttt	2569
CHST3	45	3'untranslated + 3283	ccgagggtgtcccgagctgt C/T ttctggtttctgtgacaatt	2570
CHST3	46	3'untranslated + 3327	ctgtcagatagcggccattg T/C aaacccagaggggtgcattt	2571
CHST3	47	3'untranslated + 3787	gttcccccgtggaggtcgg A/G ggggttggagctggggagg	2572
CHST3	48	3'untranslated + 3860	ggccctgtcaatgtggacag T/C agactttatccctctctt	2573
CHST3	49	3'untranslated + 4915	ccagatgtcagatagaagcca G/A tctctgtcacatacaccgca	2574
CHST3	50	3'untranslated + 4993	taagcaaatgtggctttt G/A tctctgtcaatacatgcac	2575
CHST3	51	3'untranslated + 5223	ggaaggagcttcagcaggag G/A tcttccagaggttgatt	2576
CHST3	52	3'untranslated + 5370	tcatacctgtaatccagca G/T tggggaggccaaaggtggga	2577
CHST3	53	3'untranslated + 5545	ccattcccaaaagcagaaag T/C gaagccagatctcaagggt	2578
CHST3	54	3'untranslated + 5859	caaaagcacaaagcagaatt G/C gcaacttcactgtgtca	2579
CHST3	55	3'untranslated + 5870	cagaattggcaacttcac T/A tgtctcaagagctccaagat	2580
CHST3	56	3'untranslated + 5971	ttccaaggctacagacatgg C/T gccatcctcacagccctagc	2581
CHST3	57	3'untranslated + 6208	atttcagtgtcagatgtac G/A agacaccccttcacggca	2582
CHST3	58	3'untranslated + 6223	taagagacaccccttcac G/A gcatcacctgcccattgtatg	2583
CHST3	59	3'flanking + 281	agacaggagctgtggccag C/T ggtcagggggcctgggatg	2584
CHST3	60	3'flanking + 997	acottttaagttattggag C/T ggtcctgtcatcccaacct	2585
CHST3	61	intron1 + 22595	cggagcaggaataaataa A/Δ gaataagaagaaaagggtct	2586
CHST3	62	intron1 + (35423-35424)	gctcatgtcacagccactc AT/Δ gtagaggaattccctttt	2587
NDUFV1	1	intron3 + 670	ctgggtggatgggtggca T/C ggaagtgaagacacagtcct	2588
NDUFV1	2	intron6 + 160	tgtccggcccccagccctga C/G catgactcccttggggacc	2589
NDUFV1	3	intron9 + 27	accaccccttctcgttagcac G/A gagggtgggtggcatcaagg	2590
NDUFV1	4	3'flanking + 1111	tgtaggctgaggtcagcccc A/G atccagtccaagcccaccc	2591
NDUFV1	5	3'flanking + 1658	gaatgcgggaagtgtctgtg G/A gcaaccacacatgctcgggc	2592
NDUFV1	6	3'flanking + 1713	gatctggggcggaggtaca C/T ggggttcgctgggtgaag	2593
NDUFV1	7	intron4 + 214	tgtgttaaatTTTTTTT T/Δ gcttcaaaaatatagtatt	2594
NDUFV1	8	3'flanking + (772-774)	tgaactcgggttcagggtc TTC/Δ ctgtgaacactggtttgaa	2595
NDUFV2	1	intron1 + 526	ggaatgtcgtgctaataaa C/T ggtatcaactaactctgaa	2596
NDUFV2	2	intron1 + 6689	tctgttgatgttagttgt T/G tgaacaacagaagaattica	2597
NDUFV2	3	intron1 + 14767	ccaatgcatgcccagagag C/T gtggcagggaagtacacaag	2598
NDUFV2	4	exon2 + 86	aaggaaattgcataagacag T/C tctgcaaatggagctggag	2599
NDUFV2	5	intron2 - 29	cagaagatcttactctctaa T/G gaagctggtataacactttt	2600
NDUFV2	6	intron2 - 188	tttactttgtaataact T/G atcaaatgtgttttagaca	2601
NDUFV2	7	intron4 + 677	aaaccacataclattgatt G/A tgaatgagatcacataacca	2602
NDUFV2	8	intron4 + 2295	tatgattcaactttcaaaag A/T gtattgtgatagaataga	2603
NDUFV2	9	intron5 + 102	caactctgccatctattg G/A atctgtacttacctagtaat	2604
NDUFV2	10	intron7 + 5466	tgttaagaggttttaagata A/C caaatgctcaggtttcagga	2605
NDUFV2	11	intron1 + (13562-13563)	tactcttaaaattaatcctt (CTT) ttattataaglatacagct	2606
NDUFV2	11	intron1 + (13562-13563)	tactcttaaaattaatcctt ttattataaglatacagct	2607
NDUFV3	1	5'flanking - 606	aattaccgaactacgttggg A/G cgaactctttgtataataaa	2608
NDUFV3	2	5'flanking - 222	cggccgcgcccccgcacagc G/A cccaggcgcgcgcaggccac	2609
NDUFV3	3	5'flanking - 111	tggcccaagaggaggcaatt A/G gccctactgggtgtggcgc	2610
NDUFV3	4	intron1 + 137	ttggccgcgtgacccgcctc C/T ctggcccgaggactgaccgc	2611
NDUFV3	5	intron2 + 152	tatacaagacacaagatcta T/C aacagatlttagccaaaca	2612
NDUFV3	6	intron2 + 6304	ttcacagatgaaggggttc G/A aaatttttgcagaagaagac	2613
NDUFV3	7	intron2 + 6433	tgcctctgtcttctatctc T/G tccagctcctctgattctga	2614
NDUFV3	8	intron2 + 6563	cctttgaacaacagagccccc C/T gaggtaagatcacgcaaaa	2615
NDUFV3	9	intron2 + 9819	actatctctgtgcagatgc G/A cagagcccaccttgacaggo	2616
NDUFV3	10	intron2 + 9858	aggatgccagctctttaat G/A agacatcgtttttgcttaac	2617
NDUFV3	11	intron2 + 11673	cttggtaggtgaagccctgt A/G tgtgagccaagtcatcata	2618
NDUFA10	1	5'flanking - 1734	tgcaccttgaactgtttact T/C tctgttaaccatttacctt	2619
NDUFA10	2	5'flanking - 1492	aaaacatccagcaaacagg T/C tgtgagaagttacgtctgcg	2620
NDUFA10	3	intron3 + 370	aagactgtgcatgtgccatg G/A agacagagatgtgagtgcca	2621
NDUFA10	4	intron3 + 2485	ttgtatttttttctctg G/A aatgcagtgatcagttgaca	2622
NDUFA10	5	intron4 + 236	ctgtgaagcagattggagc C/T ctggacctcaaacacagca	2623
NDUFA10	6	intron4 + 1742	tgtcggcatctgtgagtgt C/T tctgaagctcaggactgg	2624
NDUFA10	7	intron4 + 2090	ggctgggggaagcagatca T/C gttggctaagagacaggtag	2625
NDUFA10	8	intron4 + 3054	cagctgattatactactgaa A/C cgggataaatgcagcttgat	2626
NDUFA10	9	intron4 + 3066	ctactgaacgggataaatg C/T agcttgatgatttcagctg	2627
NDUFA10	10	intron4 + 3377	gtcacaggttaaatgtgtct G/A ttttactgtgtaaglagc	2628

遺伝子名	No.	存在位置	配列	配列番号
NDUFA10	11	intron5 + 46	aagcatctctatatttgaatg T/C agatcagcactaaaagccct	2629
NDUFA10	12	intron8 + 1465	gcaacgcccaggttcctgta C/T aggcctcatatccagcgtgc	2630
NDUFA10	13	intron8 + 1809	cctggaggccacaggatggc C/A ggggcaactcaacttccctct	2631
NDUFA10	14	intron8 + 11226	gttggtgactgtgtgggc A/G tctcacctctcgggctgcag	2632
NDUFA10	15	intron8 + 11319	atcttgcttccctcctgcc G/A tctgttcaggcttgaatcct	2633
NDUFA10	16	intron8 + 11386	ccataatcctgattgaacc C/T tctttttccctgctgaccc	2634
NDUFA10	17	intron8 + 12301	acataattattgttaaacag C/T cgtttaccagtgacattcat	2635
NDUFA10	18	intron8 + 13361	ccaggccactgattgcttgc G/A cttttctagcattttctta	2636
NDUFA10	19	intron9 + 183	ttctgtgtggaagctgat G/A aagtcctcagatgacagccc	2637
NDUFA10	20	intron9 + 6669	aataaataatgaccattctg G/T aaattcatagaattcctttt	2638
NDUFA10	21	intron9 + 6028	gaggacattccacagaact G/A tgactattagagcagaaggt	2639
NDUFA10	22	intron9 + 10742	ctggaggagggggggggc C/G agttcagccagcactgggt	2640
NDUFA10	23	intron9 + 10965	agaagaggttacacaggagc A/G caactctcagggagtggt	2641
NDUFA10	24	intron9 + 10989	agggttacacaggagcacac T/C tctcaggagtgagtgacg	2642
NDUFA10	25	intron9 + 12601	ctgtgaatcctctcacctgc G/A tgaaggcctgctgcctct	2643
NDUFA10	26	intron9 + 13908	caactgtttatgaaccaag C/T ctggaattgcagtggaaga	2644
NDUFA10	27	intron9 + 13911	attttatgttaccaggcct G/T gaattgcagtggaagaact	2645
NDUFA10	28	intron9 + 14064	tcttgactattagaacct A/G tcagataaattttaaacag	2646
NDUFA10	29	intron9 + 14184	tggctttgttgggaacagc G/A agagatcacagaaccagcgt	2647
NDUFA10	30	intron9 + 16487	cttgaagctgacgttccct C/A cttgaagctgacgttccct	2648
NDUFA10	31	intron9 + 16779	gccagagctgactgctttag G/A ttctcctgacattcagacc	2649
NDUFA10	32	intron9 + 17663	ttccaatcacccagaact T/G tgaagtatttgaagctct	2650
NDUFA10	33	5'flanking - (1668-1659)	gtaaattgttttaactaga (C)9-11 ttcttaaaccaaggtataaa	2651
NDUFA10	34	5'flanking - (1355-1334)	ctgtatccattggaaggc (A)15-21 tgaagggaacaaaggcaaa	2652
NDUFA10	35	intron1 + (46-61)	tggcgggtggcagggtggc GGGGTGGCGGGGTGGG/Δ gag	2653
NDUFA10	36	intron4 + 2486	cagttccacatctcccc	2654
NDUFA10	37	intron7 + (1600-1601)	ctcactggaactttttttt T/Δ aatttaattttttaaatttt	2655
NDUFA10	37	intron7 + (1600-1601)	caacttccattctgactgta (A) cgggtgattcttctgccca	2656
NDUFA10	38	intron9 + 1054	caacttccattctgactgta cgggtgattcttctgccca	2657
NDUFA10	39	intron9 + (8161-8172)	ggcgtgctgttttccctt A/Δ tctgtcctgtacacgtgtg	2658
NDUFA10	40	intron9 + (8646-8647)	ttctcgtcttctggagac (T)10-12 aatgttgaaatgtgttt	2659
NDUFA10	40	intron9 + (8646-8647)	aattccccattgcttctct (TT) ctgtagacattttaaacta	2660
NDUFA10	41	intron9 + (16503-16523)	aattccccattgcttctct ctgtagacattttaaacta	2661
NDUFA10	42	intron9 + (17905-17936)	ccctccttgaagctgctgt TCCCTCCTTG	2662
MGST1	37	5'flanking - 1376	AAGGTGATCGT/Δ gtccagatagttgctagga	2663
MGST1	38	intron1A + 147	caaatatgttatcatgta (CA)12-18 tcttcatgaaaactcttc	2664
MGST1	39	intron1B + 36	ttataaattgttttcaat T/G aaaccaactgtaattct	2665
MGST1	40	intron1C + 456	cotggagattttaaattct G/A cgaagttttttaaacaact	2666
MGST1	41	intron1C + 719	ggagaagggagccgcatga A/G aggtggcaggcaggagg	2667
MGST1	42	intron1C + 985	ccccctggacgggttctac C/T tggccccacttccccagtc	2668
MGST1	43	intron2 + 3083	gcccgaagcattgctgtat A/G gcaccagggcctccagtgag	2669
MGST1	44	intron2 + 3106	cgagtaaaatttttctaccg C/G ttgttttagagtggtgtct	2670
MGST1	45	intron3 + 1703	aaaaaattttagatatggg T/G actccctatgttcccaggc	2671
MGST1	46	intron3 + 2557	tccctatgttcccaggctg A/G tcttgaattcttgggtcaa	2672
MGST1	47	intron3 + 3032	ttctcttctaagaagaagtc T/C gtgcagatacttagcacaaa	2673
MGST1	48	intron3 + 3045	tccagcatcttccctttcca T/C tttaagttagactttttt	2674
MGST1	49	intron3 + 3289	agagacattagaatatatt C/A ctttaaaaggtagagaataa	2675
MGST1	50	intron3 + 3885	atatattccctttaagga G/G agaataacccttcaactgaga	2676
MGST1	51	intron3 + 3976	ggtttatagtgttcccccc T/A ccccgcccccaaaagaccga	2677
MGST1	52	intron3 + 4298	gaagctgccgtccaggag G/C agtctgctgtggagaagag	2678
MGST1	53	intron3 + 4519	ggaaagctgggaactgtt G/T cctggacagagctcagaa	2679
MGST1	54	3'untranslated + 603	tgtcaactgcgtaacacagg G/T gtgaagtgacattgtttt	2680
MGST1	55	3'flanking + 147	tttaatagaaaatgttatt G/T tgtcttttttcttccatctc	2681
MGST1	56	3'flanking + 237	gggtaaacccatttgaata T/C tagcattgccaatctctgt	2682
MGST1	57	3'flanking + 1318	tatttgcttccctctctct C/T tgttttttttctctgaa	2683
MGST1	58	3'flanking + 1331	cagcagctttttctatgaa C/T aagacattctccaaataact	2684
MGST1	59	intron1C + (904-923)	tggctctgtgtcatgaaca T/C gaogcgtgcacgcgcaaac	2685
MGST1	60	intron1C + (3433-3434)	atgaacatgcacgcgtgac G/A cgcacacacacacacacaca	2686

遺伝子名	No.	存在位置	配列	配列番号
MGST1	61	intron1C + (3433-3434)	ccccctcaactagacaa gcagacacattaaatgtac	2687
MGST1	62	intron1C + 5146	actatttcaatttttttt T/Δ gggggggagacagagctc	2688
MGST1	63	intron2 + (552-563)	cccagcattataagaatgac (T)9-13 aagtgcagatgtggggggg	2689
MGST1	64	exon3 + (172-173)	tagcatttggcaaggagaa AA/Δ tgccaagaagtatctcgaa	2690
MGST1	65	intron3 + (152-158)	ageaaaactggatgtctgaa TTGACA/GTCCAATAT cactg	2691
MGST1	66	intron3 + (2198-2200)	ggatttagattctccta CTA/Δ ttcttccgaccltccccc	2692
MGST1	67	intron3 + (2571-2580)	ttccatttttaagtagac (T)9-10 caccctctctgttacttcag	2693
MGST1	68	intron3 + (4682-4683)	tcctcttcagctctctatgt (GAGATGTTG TGGCTCACAT) agtcatcctcttltgagac	2694
MGST1	69	intron3 + (4682-4683)	tcctcttcagctctctatgt agtcatcctcttltgagac	2695
MGST1	70	3'flank + (1359-1360)	acacacacacacacacac CC/Δ tgcctggagttgggcaact	2696
MGST1	71	3'flank + (1889-1891)	ttagaatagtttttaactat ACT/Δ ttactctccagagagctt	2697
HMG17L1	1	3'untranslated + 864	ctttctgattttgatgac G/C gttgaagaaggagttttaa	2698
UGT2A1	1	5'flanking - 1602	ataacatcttctgcagagaa A/C ctccaatggaatacactca	2699
UGT2A1	2	5'flanking - 1480	taacagattatcttttggat G/C ggagagcttagaagagacat	2700
UGT2A1	3	5'flanking - 1406	atttcagaagattttaac A/T tgaaggatcactctgott	2701
UGT2A1	4	5'flanking - 1388	ecatgaaaaggatcactctg C/T ttattcacagacatagcat	2702
UGT2A1	5	5'flanking - 935	aaattattcaatctcttgg G/A cagtgtttctttttctt	2703
UGT2A1	6	5'flanking - 287	cctgaatgtagagttgagat G/A tacagaagctttatccaatt	2704
UGT2A1	7	5'flanking - 128	gagaagtagacacatacc C/T ataactctgtaaatctcta	2705
UGT2A1	8	intron1 + 535	cattgatcagggtgatttat C/T catgctaagcttatttaatt	2706
UGT2A1	9	intron1 + 642	tattattgatcatgttgatc A/C ttatacacetattttctta	2707
UGT2A1	10	intron1 + 1221	ttttaatctaataagcaat C/G aggaccatctaaaggaaat	2708
UGT2A1	11	intron1 + 1448	aggctctacaggcaacatc C/T acatagcagctgtgtctgg	2709
UGT2A1	12	intron1 + 2000	gacacattagctcttttct A/G cagatctctgttctaaaca	2710
UGT2A1	13	intron1 + 3118	cttaaaattcttaataa T/G cattgcaacaaatttatct	2711
UGT2A1	14	intron1 + 3191	ataaatagaacaactccta A/T gtttactctctgcagtgga	2712
UGT2A1	15	intron1 + 3770	atcaccagataatttctat C/T cattaaaggataggtcatca	2713
UGT2A1	16	intron1 + 4584	tgattggttagaattcttga A/C aaatctctagatcatctc	2714
UGT2A1	17	intron1 + 4854	tactctgtgcattgttaata G/A cctatcactgtgtgtctgcc	2715
UGT2A1	18	intron1 - 19146	ctgttaaatctcattcaa C/T ggccacatggttaaaataa	2716
UGT2A1	19	intron1 - 18346	atggcaatttttagaact G/A ttaactcccaataatgaata	2717
UGT2A1	20	intron1 - 18218	tatatcatatttttaacta T/G agatagcactagccctaatt	2718
UGT2A1	21	intron1 - 17937	ctcctaataatttgaactca C/T cataactattcagcactate	2719
UGT2A1	22	intron1 - 12585	ttccacacagggacaagtca A/G cagaggaaatttttctgct	2720
UGT2A1	23	intron1 - 11430	acaaaagggttttttttta C/G agttctgtgtgctagacgtc	2721
UGT2A1	24	intron1 - 10761	tttaaatatgcagtattt T/G ccacttttaaaaactatct	2722
UGT2A1	25	intron1 - 381	aaatctctcctctctctc C/T ttcccaggcccaactctac	2723
UGT2A1	26	intron1 - 329	ttcccttctctcttctctc A/G tctctctctcttctctc	2724
UGT2A1	27	intron1 - 41	tttctcctcagcaacata T/A aagctaatttctcctccta	2725
UGT2A1	28	intron2 + 263	caccttgatactggacttgg T/C gggacagaaaaccagatcat	2726
UGT2A1	29	intron2 + 454	agaaagcccattgaataag G/C cagggttttaggtttta	2727
UGT2A1	30	intron2 + 554	aaaaacttttttagttgac A/T atgttgagtttagtttctga	2728
UGT2A1	31	intron2 + 1113	ctgcaggcaagctctagtga A/T tgtttattataggaataat	2729
UGT2A1	32	intron2 + 1304	gacaaatcagccatgttta C/T aatagcagacattatgccat	2730
UGT2A1	33	intron2 + 1305	acaaatcagccatgtttac A/G atagcagacattatgccatt	2731
UGT2A1	34	intron2 + 1367	ctcgtataggtcttggaa A/C tatgaataccaacatgggt	2732
UGT2A1	35	intron2 + 2074	aaatttttttagacctat G/T aatcaaaaggagcctacagt	2733
UGT2A1	36	intron2 + 2164	attttattagataaactgg A/C atgctaaacattttaaagc	2734
UGT2A1	37	intron2 + 2298	taacaatttcagttagcatg A/C gaagagttgtccctattta	2735
UGT2A1	38	intron2 + 2346	tttctgtaattgttttctt T/G catgcttgacttgaatca	2736
UGT2A1	39	exon3 + 922	gtgttggtgttttctctg G/A gatcaatggtcaaaaacctt	2737
UGT2A1	40	intron3 - 217	aagcttagaagtgaataa T/C caaaacaataactctact	2738
UGT2A1	41	intron3 - 194	aaacaataactatactgg G/A tagactattatgacaagact	2739
UGT2A1	42	exon5 + 1171	acggagtcctatgttgga G/A ttccatgtttgtgatcag	2740
UGT2A1	43	intron5 + 1546	tttttaaatcagaaactc A/G gttatgtgtattcttcaaa	2741
UGT2A1	44	intron5 + 1547	tttttaaatcagaaactc A/G ttatgtgtattcttcaaa	2742
UGT2A1	45	intron5 + 2013	atcatattcattccctccc G/T ctattattgtatttgaatc	2743
UGT2A1	46	intron5 + 2318	aatttagtgotttttctaa C/T ggaagtaacctgcttaaaa	2744

遺伝子名	No.	存在位置	配列	配列番号
UGT2A1	47	intron5 + 2605	taattgacttttataaatac G/A tacatgtgtataaagtcata	2745
UGT2A1	48	intron5 + 2639	tagactattacaagttgtt A/G gttgctgcaattttgttca	2746
UGT2A1	49	intron5 + 4009	gaatccaggctggaactttt C/A ttccagacacaaacaaaat	2747
UGT2A1	50	intron5 + 4311	atacagacactgtccttttc G/A tcacaaacatacagatgtgt	2748
UGT2A1	51	intron5 + 4545	agctcacacagtatcaaat T/C atttttggaaaaattatgct	2749
UGT2A1	52	intron5 + 4616	actttttatgtctacattt G/C atcactactgttttaagcata	2750
UGT2A1	53	intron5 + 4717	tgcagaattatattttctc C/A acgtaactatggccttaaac	2751
UGT2A1	54	exon6 + 1524	gctatattttgtcataca A/G tgtgtttgttttctgtca	2752
UGT2A1	55	3'untranslated + 1683	aaggagtttaacaaaaaac G/A tctccalcctgtttccaaa	2753
UGT2A1	56	3'flanking + 685	aactagaaaataattatca T/C ttttataaatttttagtca	2754
UGT2A1	57	intron1 - (18967-18965)	ctccaaattagattgattag TAT/Δ gagttcctgggttactggt	2755
UGT2A1	58	intron1 - (18862-18803)	aatacattttcccccttca (AC)14-17 atgttactggcctatttat	2756
UGT2A1	59	intron1 - (17463-17447)	aaactagaaaaccttattc (A)16-27 gtaagaaaatggcagagaa	2757
UGT2A1	60	intron1 - 10860	attcaatgcacactttttt T/Δ gtaatggcagaattagaaca	2758
UGT2A1	61	intron2 + (528-538)	ctgttaggaacaaatgggt (A)8-10 cttttttagttgcaactgg	2759
UGT2A1	62	intron2 + (1514-1533)	ttgtgtgtatgtgtatgtt (GT)9-11 tattttaatgaattaatc	2760
UGT2A1	63	intron5 + (916-917)	gottagtatttatatat AA/Δ gtctatatatatagcttagt	2761
UGT2A1	64	intron5 + 1163	caatattttgtcattttt T/Δ ctacatttactctgtttcc	2762
UGT2A1	65	intron5 + (3819-3838)	agacagacagacacacaaac (AC)8-12 tcaacacatgtaaactactc	2763
UGT2A1	66	intron5 + 4785	tatctoaatgaaaataaaa A/Δ caaaaattgtcaattttctg	2764
OATP1	1	5'flanking - 916	ecagagtagatgttcaataa G/A tatttgtgtatctgtgaga	2765
OATP1	2	5'flanking - 843	tagtgcagcgaactatgcctt G/A atgtgtgtgttttggatt	2766
OATP1	3	5'flanking - 526	aaatgtgtgctgtatgtta T/C acatctgtacatatatttcc	2767
OATP1	4	5'flanking - 172	acaaacacaaatcaaatgtat G/A tgtgttataaaagttagcta	2768
OATP1	5	intron1 + 206	ttgattcaggcaagttagtc C/G taatggcctttgagagactt	2769
OATP1	6	intron1 + 454	caacataacaataatttctt G/A taagaaaatggccattttg	2770
OATP1	7	intron1 + 999	gttttagcaagtttagatatt A/G atgtggtatgtaagcaaaa	2771
OATP1	8	intron1 + 1223	ttgtctagaagcttagtagac G/T agcttttaaatcacagagat	2772
OATP1	9	intron1 + 1326	aactagttaggcaaccctatg T/C gtttttagggaaagcaactg	2773
OATP1	10	intron1 + 1336	gcaacccatgtgttttaggg G/A aaagcaactgaggtcatgat	2774
OATP1	11	intron1 + 1498	atagtttgccttaagaata C/T actctgagaaggtttatagt	2775
OATP1	12	intron1 + 5041	ttatgtctccagagggttag C/T tctctaaatgcataaggaga	2776
OATP1	13	intron1 + 9532	aaagactggggagccttccc A/G atgacaaaactagactaga	2777
OATP1	14	intron2 + 198	ttacctcatattaacaccta A/C atattgccacatactctacc	2778
OATP1	15	intron2 + 961	aaaaagttatataagaatat A/G agtgcactcctttctagtt	2779
OATP1	16	intron2 + 1110	gtctactagtttcaactcc T/C tttagcttagctgtatca	2780
OATP1	17	intron2 + 1419	aaagcctaagaaggtatcag T/C gcaatagcctatgtgagaag	2781
OATP1	18	intron2 + 3339	tatgtttgcacaaaaactta T/C tcttatatttgttttttca	2782
OATP1	19	intron3 + 66	caggaaatgaagttgcaatt T/C cctctctaggagcaatgctt	2783
OATP1	20	intron3 + 205	tcagtttgtcaatttacac A/G atggggatttgggacctttt	2784
OATP1	21	intron3 + 6377	aatgaatagacttttagtta C/T tggatttttagtgataaat	2785
OATP1	22	intron3 + 7238	tgaatgtcacattttttaa G/A ttgtgttcccttatctcata	2786
OATP1	23	intron4 + 1016	ttttattctggattcatgtt T/C gtggaaattgcagtagtcca	2787
OATP1	24	intron5 + 110	tcccaaatgatgagtagagt A/G tcttgccacagttggccttc	2788
OATP1	25	intron6 + 496	agtgtctgaattataagcca A/G ttttatagttgtttggacc	2789
OATP1	26	intron7 + 1934	aaagtgaaggaaattaasa G/C tgagaacttgagcctgaatg	2790
OATP1	27	intron7 + 2140	tgaagtgtaccaaataaato A/G gcatctctgaggtgggacc	2791
OATP1	28	intron7 + 2365	tgaattcttcttatcaact C/T gattttccccagactttac	2792
OATP1	29	intron8 + 88	gcaaaactcctaagttgaagt G/C ttttaggataatttttgaact	2793
OATP1	30	intron9 + 534	tcatattttgtatttttaa G/A ttatotgggttttactgaaa	2794
OATP1	31	intron9 + 1286	tatttctctgagataaatca T/C tgaaggagtggtctatgtgt	2795
OATP1	32	intron11 + 215	ttcacttctatttctctgcta C/T ttttcttcttatttcttag	2796
OATP1	33	intron11 + 663	ttcttcttcttttggagctc T/A aaagttaggttcagttaatc	2797
OATP1	34	intron11 + 999	atcatactgcatgagaggtt A/G gaattatctaacctttgtat	2798
OATP1	35	intron11 + 16727	ttctttttattacaactt A/G tttaacttttcaggtgtatga	2799
OATP1	36	intron12 + 48	ctatcagaacaataattatta T/G tattattttttattacactt	2800
OATP1	37	intron12 + 686	latgttttgataaactttgc C/A gtacaastaagaagaactga	2801
OATP1	38	intron12 + 708	tacaataaagaaaattgaa A/G tatttccaaataaatcaagt	2802
OATP1	39	intron13 + 418	tctctgtctccaaatcat A/G lattttctccctctttacat	2803
OATP1	40	intron13 + 436	atatatttttctccctcttta C/A attttgtgaaacaacttcc	2804

遺伝子名	No.	存在位置	配列	配列番号
OATP1	41	3'untranslated + 2130	gtctttaagaacctaataaa C/A ctcttaectcaaaataata	2805
OATP1	42	3'flanking + 57	agtgaactaaagtttttctta C/A aaacaagtgtcgaatcaaa	2806
OATP1	43	3'flanking + 572	aatacactatggttatttat G/A tgtactataatggagttag	2807
OATP1	44	3'flanking + 788	atttcctaataatgacagatg C/T atcatatgaaaaagaagc	2808
OATP1	45	3'flanking + 1356	aggtgaactgacataaatggg G/A gcagaggacataatgaggtt	2809
OATP1	46	5'untranslated - (189-188)	attttctaactctgtattaaa (A) gcgttcagggtatttttga	2810
OATP1	47	5'untranslated - (189-188)	attttctaactctgtattaaa gcgttcagggtatttttga	2811
OATP1	48	intron4 + (725-726)	tgatctttaaatgacgggaa AA/Δ caggcaagtacgtatagt	2812
OATP1	49	intron4 + (1082-1083)	attgagtcaggaaaccaa CA/Δ gtttcaaaaatttgaaaat	2813
OATP1	50	intron4 + 2301	aatgtcatgtctttttttt T/Δ eatgcagagtgtacaaagga	2814
OATP1	51	intron9 + (241-246)	attgatgtgcatgtgggtg TGTGTG/Δ catgatgtcttttgatat	2815
OATP2	1	5'flanking - 2574	ggataaagcaacccctatgt A/G tcactgcgcaggagggga	2816
OATP2	2	5'flanking - 2366	aacataggaatgtgcagagc C/T ctgtgggattagagaagag	2817
OATP2	3	5'flanking - 2244	tgatgatgccagagcttga T/G cattgtgtgtatagaaca	2818
OATP2	4	5'flanking - 1723	tctttcagactcaaaagccc A/G tgatatttcctcagagctgt	2819
OATP2	5	5'flanking - 1180	tgcttattaaagggcataa T/G ctttggtctcctgagccaga	2820
OATP2	6	5'flanking - 811	tatgtcatatgtgtatata G/A gtaaaagtgtgtatatgt	2821
OATP2	7	intron1 + 7188	aactcatttgaatttaagaa A/G aaaaatgttcagagaaaaa	2822
OATP2	8	intron1 + 7331	gtgaatgaggaaacaaagt T/C ccaccttttttctgaata	2823
OATP2	9	intron1 + 7391	agagagatgtgaastagt T/G ttctggggaagttagggga	2824
OATP2	10	intron1 + 7886	ttgttagtagaaagaaaatc G/A aagcctaaaactaaaggag	2825
OATP2	11	intron1 + 7958	ttgcttattatataattttt T/A aaaaaagatttcoataat	2826
OATP2	12	intron1 + 7959	tgctattatataattttt A/T aaaaaagatttctaatat	2827
OATP2	13	intron1 + 8036	ggaaaaaatgggtgaatt A/T atcaaggcgagcttatao	2828
OATP2	14	intron1 + 9164	acattatattctatataaa G/T agtcagttgaagtataagt	2829
OATP2	15	intron1 + 10123	tctgtcttctcactttgt T/G tccagcattgacctagcaga	2830
OATP2	16	intron2 + 193	tgattaagtattcttggc G/A aaatttttgatgcttaata	2831
OATP2	17	intron2 + 1020	ttgagtaacatttagccaa G/A tggcagtcataaggaaag	2832
OATP2	18	intron2 + 14865	agagggaataatcagaag G/T ttatttggttaagtacaga	2833
OATP2	19	intron2 + 14931	gtagtataataacagaaaa A/T taicagaaatttaaaaaat	2834
OATP2	20	intron2 + 15417	ttctaaataagtaagctaa A/T tttcttatattactacta	2835
OATP2	21	intron2 + 20823	ttgtataagagatacaaaac A/C aattctactagggaata	2836
OATP2	22	intron2 + 20852	ctagggaataataaagctca G/C taaggaggtgccttaagct	2837
OATP2	23	intron2 + 20930	atggagagaagcagcaggt A/G ccacagataaatgaagttag	2838
OATP2	24	intron2 + 21360	ttcaaaagctgtattctca T/G tagtgccttttgaataaa	2839
OATP2	25	intron2 + 21467	tatatacacaataacctgccc A/G gaagatgtgtataagccaa	2840
OATP2	26	intron2 + 21621	tatcaactattgaagaga A/G ctactattctaaactaggga	2841
OATP2	27	intron2 + 22760	ttccccacctctgtgtgt C/G tctcttaaaacttctctgt	2842
OATP2	28	intron2 + 23199	ccatctgcacataacatta C/T aaactataggcaattataa	2843
OATP2	29	intron2 + 23218	acaaacttattggcaattata A/G aactcaatacatattact	2844
OATP2	30	intron2 + 23330	gccctgttctgttctct G/A tacctgcctcaactacatag	2845
OATP2	31	intron2 + 23673	ctggagacgttagctcaaac T/C gaggatgaaatagacattt	2846
OATP2	32	intron3 + 89	ggttatcaactgggttaaat T/G tatctctcaaggcaatttg	2847
OATP2	33	intron3 + 224	tgctaaatattctataatgc A/G caaagaatgatgaactgaa	2848
OATP2	34	intron4 + 97	ccctttaaataaggcagttac C/A ttttgagaagtacccaata	2849
OATP2	35	intron4 + 568	ttcatgatccaaattgtggc A/G acgtatttccaggcaacaag	2850
OATP2	36	intron4 + 599	aggcaacaagatagaagaag A/G aaagaataagaagcaaaaa	2851
OATP2	37	intron4 + 753	aaatagacattattccaag T/A tacciaagttcccggttaaaa	2852
OATP2	38	intron4 + 781	ttcccggttaaaaatcccaa G/C tataattacttggaaggaa	2853
OATP2	39	intron4 + 1196	aaggaccacaatctagatca G/T cattgctctaaatgccat	2854
OATP2	40	intron4 + 1229	tatgcataaatatgtgacac T/C ttggcaootgtattctac	2855
OATP2	41	intron4 + 1623	catctagttgaattgatta G/C attttattttactacattt	2856
OATP2	42	exon5 + 388	attctaaagaaactaatatc A/G attcatcagaaattcaaca	2857
OATP2	43	exon5 + 452	taatacaattttatcaactca A/G tagagcatcacctgagatag	2858
OATP2	44	intron5 + 165	ttatatacacagttcgccc A/T ttaacaacacaggttaaac	2859
OATP2	45	intron5 + 189	acaacacaggtttaactac G/A cgttttcaacttctatgoaaa	2860
OATP2	46	intron5 + 191	aacacaggtttaactacgc G/A ttttcaacttctatgcaaat	2861
OATP2	47	intron5 + 507	ataataactttgctttcattg C/T aaaaaggcaaacgttatatc	2862
OATP2	48	intron5 + 520	ttcattgcaaaaggcaaac A/G ttatatcatttaaaagcttt	2863
OATP2	49	intron5 + 856	ogtcatgataaacctaataag A/G ataaacaacaaaaagaaa	2864

遺伝子名	No.	存在位置	配列	配列番号
OATP2	50	intron5 + 1157	acagataattttacttgtt T/C gtgtttttctgtatgatg	2865
OATP2	51	intron5 + 1226	ccttgattgtaataatctcc A/C catgccaaagagtgggcccag	2866
OATP2	52	intron5 + 1228	ttgattgtaataatctccac A/C tgcgaagagtgggcccaggt	2867
OATP2	53	intron5 + 1304	actgttctctgtgtaaatgaa G/T aagtctcacaagctctgatg	2868
OATP2	54	intron5 + 1348	ttataaatgagagttccoct G/A caaaagctctcttgccctgcc	2869
OATP2	55	intron5 + 1407	ttgtcttctcttcatcttcc G/A ccatgattgtgagccccc	2870
OATP2	56	exon6 + 521	gtcatatcatgtgatata T/C gttcatggtaaatatgcttc	2871
OATP2	57	exon6 + 571	ggagagctccctagtagcca T/C tgggcttcttaccattgat	2872
OATP2	58	exon6 + 597	ctttcttaccattgatgatt C/T gctaaagagacattcttc	2873
OATP2	59	intron7 + 33	agaacaagglaccatgataa C/T gtcttctcagccacatgc	2874
OATP2	60	intron7 + 267	caaaataaccaaatgtaaaa T/A gtctccctcccaactgact	2875
OATP2	61	intron7 + 1260	gtaatctcacatttctctgc A/G ttacacttggttaaaacttt	2876
OATP2	62	intron7 + 1386	agtctcaaatatagccaa G/A agcatgcctttattgtaacc	2877
OATP2	63	intron7 + 1472	ctttaccacatgacagagtg G/A catgtcttagcaataata	2878
OATP2	64	intron7 + 1697	tttcatgttcaattttaga C/A atatgccttagagtagctac	2879
OATP2	65	intron7 + 2273	ttctcacgtctctatctagcg C/T gattatgaccttagttact	2880
OATP2	66	intron8 + 207	gtggaagagaattagtttg T/C acttttagcaggagagaac	2881
OATP2	67	intron8 + 546	tcgggagaagtttctcccta T/C gtaattgagtaaatatttt	2882
OATP2	68	intron8 + 565	etgtaattgagtaaatattt A/C ttgtgtaattatctatcta	2883
OATP2	69	intron8 + 668	taagtaagctaaattaggat G/T catcagcetttgcaagtcco	2884
OATP2	70	intron8 + 739	tggagaccattgagagtgaa A/G taacaaagagaatgacttg	2885
OATP2	71	intron8 + 2193	tgtcatcagatccaaatgac A/G taatttctacccatgaacaga	2886
OATP2	72	intron9 + 112	attttagtaatacaggatga G/C tataatttcttctgttctt	2887
OATP2	73	intron9 + 266	tttagaggtatctctgtata A/G ttgactcttataatttagtg	2888
OATP2	74	intron9 + 305	tgtcaagatctgagacaaac G/G cttttgtaattataatcatt	2889
OATP2	75	intron9 + 888	aggttctgtatgtttttta T/C aaatgacaaagatataataa	2890
OATP2	76	intron11 + 10224	tacactgtttccataaaaaa T/C tctctctattattcttagt	2891
OATP2	77	intron11 + 10359	attaatagattcaacgtgag G/C ttccttaaacctttagccta	2892
OATP2	78	intron11 + 10916	cttatatagaaagaatcca G/G aaaaactttttacattttat	2893
OATP2	79	intron11 + 10997	aatatattgtttgaacaaag T/C gagacttcaactaaataat	2894
OATP2	80	intron11 + 11018	gagacttcaactaaataat G/A caatgtatttgcagcaactgt	2895
OATP2	81	intron12 + 442	aacatctcaaaaacttttaac C/T gactcacagcgtgactttta	2896
OATP2	82	intron12 + 445	attccaaaacttttaacga C/T tcacagcatgacttttataa	2897
OATP2	83	intron12 + 447	tccaaaacttttaactgact C/A acagcatgacttttataa	2898
OATP2	84	intron12 + 907	aatgaanaagaggtggcaga T/C tgaacatactgaatgagag	2899
OATP2	85	intron13 + 65	tatatatatatatata C/T acacacacatacatatatto	2900
OATP2	86	intron13 + 870	aattctgagtatctctatto G/A atgtatccaactctgtggcac	2901
OATP2	87	intron13 + 1935	taaaaaanaaaagcttgc T/C ttacagcaatttgagccaaag	2902
OATP2	88	intron13 + 2261	aacgaatctccaaaattttt G/C aacttttatttaatacaaat	2903
OATP2	89	intron14 + 248	tcaaggtataataaccaactt G/A tcaaaaatcagagataatag	2904
OATP2	90	intron14 + 2463	atttgtttactaatatggaa G/G cttcttcaagcatattttt	2905
OATP2	91	intron14 + 2857	tcacatgtattttccaggac A/T cctggcaagatgctcctcag	2906
OATP2	92	intron14 + 11458	atctccagaggtctctgtgt C/T tcccaaaagtccactgccc	2907
OATP2	93	3'untranslated + 2243	ataataaaacaaactgtagg T/C egaaaaatgagagtaactca	2908
OATP2	94	3'untranslated + 2404	tcttaataaaacaaatgagt A/G tctacaggtagaggttaaa	2909
OATP2	95	3'untranslated + 2515	cagagtttgaaactataaac T/G aaggcctgaagtctagcttg	2910
OATP2	96	3'untranslated + 2539	gcctgaagtctagcttggat A/G tatgtacataaatatctgt	2911
OATP2	97	intron1 + 457	taottggcaaacataaaaaa (A) caggtgtctcaagtcacat	2912
OATP2	98	intron1 + 457	taattggcaaacataaaaaa caggtgtctcaagtcacat	2913
OATP2	99	intron1 + (7537-7538)	gatcagcattacaaccaaga (G) atggagaatgacattcagga	2914
OATP2	100	intron1 + (7537-7538)	gatcagcattacaaccaaga atggagaatgacattcagga	2915
OATP2	101	intron1 + (10032-10035)	tgtgtgattctatattactt AGTT/Δ gtttcaatttctctccaca	2916
OATP2	102	intron1 + (10058-10061)	ttcaaatctctctccacaaa TTTA/Δ ttttctattaaattgtaat	2917
OATP2	103	intron2 + (413-423)	aattatttaaaaattctttt (A)11-13 caaaaaacaggatttaaaa	2918
OATP2	104	intron3 + (1595-1603)	tggcaagtaattcaagtc (T)8-10 gtatttaaaacaactttca	2919
OATP2	105	intron4 + (10-23)	ttcatggatagtagtatt (A)12-14 cctctgtgccactatcagta	2920
OATP2	106	intron5 + (1567-1572)	gtgaataaaattacttcta CTTGTA/Δ aattaaaaaataagtag	2921
OATP2	107	intron5 + (1577-1585)	attactgtacttgaatt (A)9-10 taagtataataaagagt	2922
OATP2	108	intron8 + (1939-1941)	ttctctaacctcttactt CTT/Δ atttcaagcagatgcaactg	2923
OATP2	109	intron10 + (3077-3078)	aaattctttatctactttt (CTT) ttccctcttctctgcttcc	2924



遺伝子名	No.	存在位置	配列	配列番号
OATP2	110	intron10 + (3077-3078)	aaattctttatctactttt ttccctctttctgtcttc	2925
OATP2	111	intron11 + 11011	aaacagtgagacttactaa A/Δ tataatgcaatgtatttga	2926
OATP2	112	intron12 + (1160-1169)	agcatgacatggttagatg (A)9-11 gcatttlaacatttgttaa	2927
OATP2	113	intron12 + (1310-1312)	tccatcttaataaaatgt TGT/Δ ctactcaaaaggagaagtct	2928
OATP2	114	intron13 + (9-34)	tacggacactaggtagatg (A)24-27 tatatatatatatatata	2929
OATP2	115	intron13 + (35-64)	aaaaaaataaaaaaa (TA)10-21 cacacacacatacatatt	2930
OATP2	116	intron13 + (1379-1387)	aaattttaccacacatac (A)8-10 caaagtaaagttagaacac	2931
OATP2	117	intron13 + (1916-1928)	aattctcttaaaataatgtt (A)11-13 gtctgctttacagcaattg	2932
OATP2	118	intron14 + (588-596)	caattatactttacctctt (A)8-10 ctaatttcaaatctatatot	2933
OATP8	1	5'flanking - 1413	aataggggcttaataactct G/C aaacttatgtttctcatat	2934
OATP8	2	5'flanking - 1345	gaatttatctacagatag A/G ccacacagaaatgacatat	2935
OATP8	3	intron1 + 38962	atgaattagtttaaaata G/A caaccttaactatactctc	2936
OATP8	4	intron2 + 253	acagacttaccacaaagaa T/G tatctctcccaaatgtcta	2937
OATP8	5	intron2 + 329	actcatgtttgcaaatgaa C/G tttttaggaacttttatctc	2938
OATP8	6	intron2 + 2568	ccattctgtgtctttcttc G/A tgaactattttccatcagt	2939
OATP8	7	intron2 + 2679	ctttattgtctcttctcca T/C gttttaacttaaatattta	2940
OATP8	8	intron2 + 2753	caggaaactttcacaaagcc C/A ctaatttaatttagctccot	2941
OATP8	9	intron2 + 3132	tgttttaagttaggagett T/C accttcacagttaaatata	2942
OATP8	10	intron2 + 3193	aattgtctggcctatttgc A/G ttcatgttggcctcattcagt	2943
OATP8	11	intron2 + 3207	atttgcctcatttgggca T/C tcagttctctagatacaaa	2944
OATP8	12	exon3 + 334	gaactgggaagtattttgaca T/G ctttaccacatttctcatg	2945
OATP8	13	intron3 + 76	agaattttatttttatactt G/A taagtggcctgtacottt	2946
OATP8	14	intron4 + 2443	tcaatttcatgttgccttta C/T agttataggtattctaaaga	2947
OATP8	15	intron4 + 67	taatacagctctataaagtt G/G tgatattctttaacaaatt	2948
OATP8	16	intron4 + 91	tattctttaacaaatlgat T/A taagaacaaataggaagac	2949
OATP8	17	intron4 + 197	ggttgaactgcacctgttc G/A ctatatgcagcttttctcc	2950
OATP8	18	intron4 + 813	tttaacagataaaanaaa T/A attttgtaacgacaaagaa	2951
OATP8	19	intron4 + 974	atatgcaccitaaataaac C/G tggatttttaaatgttaot	2952
OATP8	20	intron4 + 1003	taaatatgaotgtacataa G/T gaattattatcatattttt	2953
OATP8	21	intron6 + 155	cattaataatcagaataaa A/G agaaatttagctccatttta	2954
OATP8	22	intron6 + 750	atccaaactgggttttagtt T/G cctctttctgcctctcctcc	2955
OATP8	23	intron6 + 780	gcctctcctccatctgcacc C/T tctcttttctctagcaaa	2956
OATP8	24	intron6 + 1248	ctatgcctctgaatctcaca C/T ttccotttatttaaatgtg	2957
OATP8	25	intron6 + 1500	tctgtctgtattagcatat A/G ataactcatcagggtttgtg	2958
OATP8	26	intron6 + 2008	ataacataaatggttaaga A/G tatcaaggcaggaattag	2959
OATP8	27	intron6 + 2087	actactctccccatacaac T/C aaaaactcatgtctccccag	2960
OATP8	28	intron6 + 12305	tcactatgtaggagactgcaa T/C cattatcattatttccaga	2961
OATP8	29	intron7 + 363	taacaaatgataccagccat C/G atactattctctgtaatag	2962
OATP8	30	intron7 + 411	ccattatttttggagaact G/A gtggatgatattaagacgt	2963
OATP8	31	intron7 + 428	cctgttgatgatattaaga C/A gtatatagatcaactgaata	2964
OATP8	32	intron7 + 634	aaaatttatatatcatat A/G taactttacctaagatttca	2965
OATP8	33	intron7 + 1791	tgttttttaaggtagtga T/C gtaaatagtaagcgaattt	2966
OATP8	34	intron7 + 2000	agttggcaaatgtctctca G/A gtacataaalgtaacttga	2967
OATP8	35	intron7 + 2043	gtttattgatccattttta A/G tggatcaacattgtagtga	2968
OATP8	36	intron7 + 2171	atttttttggacaaaggtc G/A cgactctcttagaagcctc	2969
OATP8	37	intron7 + 2173	ttatttttagcaaaaggtgc G/A actctcttagaagcctcac	2970
OATP8	38	intron7 + 2179	tgagcaaaagtgcgactct C/T ttgaagacctcacaaatca	2971
OATP8	39	intron7 + 2219	atttgaacttaagtctta T/G ataacttatatttcaaaat	2972
OATP8	40	intron7 + 2261	cagatataatataatttt A/T ttattgaatatgttttt	2973
OATP8	41	intron8 + 150	acaaaatttctccatctgt T/C atactatcgtttgtctgat	2974
OATP8	42	intron8 + 154	aatttctccatcttgaata A/T catcgttttctgcatttga	2975
OATP8	43	intron8 + 1303	ttttttttagatggagct C/T gctctgttcccaggctggg	2976
OATP8	44	intron8 + 1372	aagctccgctccaggttcc T/G ccaccttctcttaagaaa	2977
OATP8	45	exon9 + 1272	tctctctgtttcaacttct A/G tatttccctctaatctgca	2978
OATP8	46	intron10 + 63	tcacagtttgatttaataa A/T tacttatcaaatcttctat	2979
OATP8	47	intron10 + 911	cttgcccaatactaccacaa C/T gtattttaaacggcctgga	2980
OATP8	48	intron10 + 972	tcctagtttctctgaagata G/A gctacaactttagtaactt	2981
OATP8	49	intron10 + 1101	tcctgtctctgtgtgttc A/T gtatggaagacctgaagag	2982
OATP8	50	intron10 + 1103	cctgtctctgtgtgttcag T/C agtgaagacctgaagagag	2983
OATP8	51	intron10 + 2027	ccattttcatgagtggcta A/G gttttgtccgttttcaact	2984

遺伝子名	No.	存在位置	配列	配列番号
OATP8	52	intron10 + 2028	ccattttcatgagtgctaa G/A ttgtgtcccggttcaaaacta	2985
OATP8	53	intron10 + 2148	gtattttgaaagaaatgt A/G ggtgggaagagaaatatttta	2986
OATP8	54	intron10 + 2214	atatacagaatttcatacac T/C aatttcttaattcctaatt	2987
OATP8	55	intron10 + 2316	taaatatttttagttgagac T/G tctttaaatataatggatg	2988
OATP8	56	intron10 + 2372	tgattttggcaaatgtttt G/T ttaattttcaaaaactatt	2989
OATP8	57	exon11 + 1557	cagaacagaaattactcagc A/G cacttgggtgaatgcccaag	2990
OATP8	58	intron11 + 147	ttttctagaattattttgat A/C tttaataaacatcattaata	2991
OATP8	59	intron11 + 10339	aaaaaacctgcatttttagtg G/C tttagctagaagattttgtc	2992
OATP8	60	intron11 + 10358	ggttagctagaagatttg T/G ctcatatcaccaataaattta	2993
OATP8	61	intron11 + 10538	caacagaggatcaatglaaa T/G gaaatctcttaataaaca	2994
OATP8	62	intron12 + 55	ataaatattaatgttaata C/T taaagactgaatgcaattaa	2995
OATP8	63	intron12 + 1802	taaatgactcgttaaaaa T/G tcatgtataaotcactgtca	2996
OATP8	64	intron12 + 2612	ataggcatalaataactcttt C/A ttccctctgtatataggag	2997
OATP8	65	exon13 + 1833	aacagctgtggagcacaagg G/A gctttaggatatataattc	2998
OATP8	66	5'flanking - (1590-1587)	atctcataacatataccta TATC/Δ tatgttatgtctcgttat	2999
OATP8	67	5'untranslated - (11-28)	agcatcagcaacaaattaaaa ATATTCACT TGGTATCTG/Δ tagtttaataatggaccaac	3000
OATP8	68	5'untranslated - (4-7)	tattcacttgggtatctgtag TTTA/Δ ataattggaccaacatcaaca	3001
OATP8	69	intron4 + (213-214)	ccgttgcgttatatgcagc (T) ttgttccaaccaaacagaa	3002
OATP8	70	intron4 + (213-214)	ccgttgcgttatatgcagc ttgttccaaccaaacagaa	3003
OATP8	71	intron4 + 505	tataactttctctttataaa G/Δ atgcaaaatgtttatgcatt	3004
OATP8	72	intron4 + 816	aaaaataaatgagtgagg A/Δ aaaaaatgtttcaagttt	3005
OATP8	73	intron4 + (804-812)	acatccatgtttaacagaat (A)9-11 tattttgtaacgcaaaaga	3006
OATP8	74	intron4 + 855	gagattgtttaaccaaatta G/Δ gaaactattattcaacacac	3007
OATP8	75	intron7 + (619-628)	tttttatatgaattaaat (AT)4-5 catatataatcttaccctag	3008
OATP8	76	intron7 + (1773-1779)	attttctatattatgaactg (T)7-8 aagggtatgtatgtaatg	3009
OATP8	78	intron8 + (1270-1290)	tagtggccaccctctctc (T)19-23 gagatggatctcgtctgt	3010
OATP8	79	intron10 + 665	ttctttcttaactcaaggc T/Δ tttttttccatgtgacac	3011
OATP8	80	intron11 + (247-250)	aaaaatottaaggcacacac TGAT/Δ tgacagttgccttgattgta	3012
OATP8	81	intron12 + (1622-1630)	aaataaattgttggcatcta (T)8-10 atttttcaaggctcgtct	3013
OATP8	82	3'untranslated + (2464-2465)	gagaaaagcctgatgccttt A/Δ aaaaaaatgaaacatttg	3014
OAT1	1	5'untranslated - 127	gcagctcgagctcagctccc G/A gagcaaccagctcggagg	3015
OAT1	2	5'untranslated - 20	gaaggcctcagccccagcc A/G ctgggtcggcctggcccaa	3016
OAT1	3	intron3 + 150	caatgagaacaacttttctc G/A ggctcatgcccccagccc	3017
OAT1	4	intron4 + 211	ttctctggtctcccccactc A/C gttctccagctcgtctctc	3018
OAT1	5	intron5 + 33	gagacttcccatgataacct C/T ccagggttcacccccaaac	3019
OAT1	6	intron6 + 168	gaaccagatgcccccagcct C/T gactcagtcaccgtctccac	3020
OAT1	7	intron1 + (58-71)	ggaagatggggcctttgtt (A)13-15 gtacatggagaattaactg	3021
OAT1	8	intron3 + (1306-1319)	aataggttgaggaggagcag (A)12-15 tcaagagtgtggaggagca	3022
OAT2	1	intron4 + 842	ctgacctcaaaaagtgttt G/A attacagcagtgggccattg	3023
OAT2	2	intron5 + 33	gtgtgtgtgagcatgcatat C/A tgtgtgtgtgggagtggtg	3024
OAT2	3	intron5 + 183	ccacatccatcattcagagac A/C aactcgtctcagctgccatg	3025
OAT2	4	intron5 + 184	caatccatcattcagagaca A/C actcgtctcagctgccatg	3026
OAT2	5	exon7 + 1269	actagactgctagtgtctc C/T ggtgagcccagtcaccatagg	3027
OAT2	6	3'untranslated + 1792	ataaatgtgtacatgagtg A/G tgaacacaaatcacatagg	3028
OAT2	7	3'flanking + 1386	tgtagcagcccacatcgcca G/A ttgtcacacctgagagagag	3029
OAT3	1	5'flanking - 580	ctgtgtcagagacacagaca C/G gtaggtcctggtgccccag	3030
OAT3	2	5'flanking - 463	ttctgagaggcaaatcccc T/C tccctactoggagggtgcc	3031
OAT3	3	5'untranslated - 16	cctgcccacagctctggtc G/A tcttggcccagtgccatgac	3032
OAT3	4	exon2 + 153	octgtcccaccactgtcgccc G/A ccccaaatgacctccacagg	3033
OAT3	5	intron2 + 177	gcaccaagacccttgcttct T/C tccactcagagtcacagca	3034
OAT3	6	intron2 + 6201	gctcatcctctctgtctctt T/G tgcacacagcacaggttctc	3035
OAT3	7	intron3 + 79	tctgtctccaccgtgcaccc G/C caaagaggcaaaagactggg	3036
OAT3	8	exon5 + 723	tggcgttggctcagttaac T/A gtgtccattcccttctctgt	3037
OAT3	9	intron5 + 524	tcaagtacaaaggaaagt T/C aaagagagcctgagcctgg	3038
OAT3	10	intron7 + 386	gaccaatgggttcagactc G/A aagacaaaattatgtttat	3039
OAT3	11	intron7 + 754	gcccacgtcagacatgacca G/A tcaatcacagcacttltcc	3040
OAT3	12	intron9 + 81	attgtctgtcctctacoca G/A gggagccatccttttgaac	3041
OAT3	13	5'flanking - (661-660)	tacatttggctccccgggg (G) agcggctgacagagagaa	3042
OAT3	14	5'flanking - (661-660)	tacatttggctccccgggg agcggctgacagagagaa	3043



遺伝子名	No.	存在位置	配列	配列番号
QAT3	15	intron8 + (211-212)	tcctcttgcctcagcagc AA/Δ gctgctgctcctcagc	3044
ALDH1A2	1	5'flanking-718	cctgctctctctctctcagc C/G cctgctcctgctcctctcagc	3045
ALDH1A2	2	intron1+314	cctgctcctctcctcctcagc G/Δ cctgctcctcctcctcagc	3046
ALDH1A2	3	intron1+684-675	ttctgctcctcagcagcctcagc (T)11-13 ctgctcctcctcctcagc	3047
ALDH1A2	4	intron1+1370	cctgctcctcagcagcttc A/G cctgctcctcctcctcagc	3048
ALDH1A2	5	intron1+1857	gctgctctcctcagcagcttc A/Δ ctgctcctcctcctcagc	3049
ALDH1A2	6	intron1+1934	tcctgctctcctcagcagcttc C/G tcctgctctcctcagc	3050
ALDH1A2	7	intron1+1971-1960	cctgctcctcctcagcagc (T)5-11 cctgctcctcctcagc	3051
ALDH1A2	8	intron1+2185	tcctgctcctcctcagcagc T/C tcctgctcctcctcagc	3052
ALDH1A2	9	intron1+2187	tcctgctcctcctcagcagc C/T tcctgctcctcctcagc	3053
ALDH1A2	10	intron1+2241	tcctgctcctcctcagcagc T/Δ tcctgctcctcctcagc	3054
ALDH1A2	11	intron1+3035	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3055
ALDH1A2	12	intron1+3319	cctgctcctcctcagcagc T/Δ cctgctcctcctcagc	3056
ALDH1A2	13	intron1+3474	tcctgctcctcctcagcagc T/G tcctgctcctcctcagc	3057
ALDH1A2	14	intron1+4189	cctgctcctcctcagcagc G/G cctgctcctcctcagc	3058
ALDH1A2	15	intron1+4222	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3059
ALDH1A2	16	intron1+4254	cctgctcctcctcagcagc T/Δ cctgctcctcctcagc	3060
ALDH1A2	17	intron1+4397	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3061
ALDH1A2	18	intron1+5335	cctgctcctcctcagcagc T/G cctgctcctcctcagc	3062
ALDH1A2	19	intron1+5359	tcctgctcctcctcagcagc T/G tcctgctcctcctcagc	3063
ALDH1A2	20	intron1+5559	cctgctcctcctcagcagc C/T cctgctcctcctcagc	3064
ALDH1A2	21	intron1+5631-5636	tcctgctcctcctcagcagc (AAGA) cctgctcctcctcagc	3065
ALDH1A2	22	intron1+5631-5632	tcctgctcctcctcagcagc cctgctcctcctcagc	3066
ALDH1A2	23	intron1+12731	cctgctcctcctcagcagc T/A cctgctcctcctcagc	3067
ALDH1A2	24	intron1+13442	cctgctcctcctcagcagc G/A cctgctcctcctcagc	3068
ALDH1A2	25	intron1+14173-14176	tcctgctcctcctcagcagc AAA/Δ cctgctcctcctcagc	3069
ALDH1A2	26	intron1+14586	cctgctcctcctcagcagc C/G cctgctcctcctcagc	3070
ALDH1A2	27	intron1+14599	tcctgctcctcctcagcagc A/G tcctgctcctcctcagc	3071
ALDH1A2	28	intron1+14711	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3072
ALDH1A2	29	intron1+16327-16337	tcctgctcctcctcagcagc (T)9-11 cctgctcctcctcagc	3073
ALDH1A2	30	intron1+17258	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3074
ALDH1A2	31	intron1+18277	tcctgctcctcctcagcagc A/G tcctgctcctcctcagc	3075
ALDH1A2	32	intron1+18274	cctgctcctcctcagcagc T/A cctgctcctcctcagc	3076
ALDH1A2	33	intron1+19351	cctgctcctcctcagcagc C/T cctgctcctcctcagc	3077
ALDH1A2	34	intron1+21514	tcctgctcctcctcagcagc G/A tcctgctcctcctcagc	3078
ALDH1A2	35	intron1+21514	cctgctcctcctcagcagc A/G cctgctcctcctcagc	3079
ALDH1A2	36	intron1+21729	cctgctcctcctcagcagc C/T cctgctcctcctcagc	3080
ALDH1A2	37	intron1+21855	tcctgctcctcctcagcagc A/Δ cctgctcctcctcagc	3081
ALDH1A2	38	intron1+26262	cctgctcctcctcagcagc T/G cctgctcctcctcagc	3082
ALDH1A2	39	intron1+27805	tcctgctcctcctcagcagc C/G tcctgctcctcctcagc	3083
ALDH1A2	40	intron1+28204	cctgctcctcctcagcagc T/C cctgctcctcctcagc	3084
ALDH1A2	41	intron1+48470	cctgctcctcctcagcagc G/T cctgctcctcctcagc	3085
ALDH1A2	42	intron1+48334	cctgctcctcctcagcagc G/T cctgctcctcctcagc	3086
ALDH1A2	43	intron1+60351	cctgctcctcctcagcagc C/G cctgctcctcctcagc	3087
ALDH1A2	44	intron1+91181	tcctgctcctcctcagcagc T/G tcctgctcctcctcagc	3088
ALDH1A2	45	intron2+654	cctgctcctcctcagcagc G/A cctgctcctcctcagc	3089
ALDH1A2	46	intron3+968	tcctgctcctcctcagcagc C/T tcctgctcctcctcagc	3090
ALDH1A2	47	intron3+1112	cctgctcctcctcagcagc T/A cctgctcctcctcagc	3091
ALDH1A2	48	intron3+1273	cctgctcctcctcagcagc C/T cctgctcctcctcagc	3092
ALDH1A2	49	intron3+1743	tcctgctcctcctcagcagc A/G tcctgctcctcctcagc	3093
ALDH1A2	50	intron3+2891	cctgctcctcctcagcagc G/A cctgctcctcctcagc	3094
ALDH1A2	51	intron4+2919	tcctgctcctcctcagcagc T/C tcctgctcctcctcagc	3095
ALDH1A2	52	intron4+290	cctgctcctcctcagcagc T/G cctgctcctcctcagc	3096
ALDH1A2	53	intron4+481	tcctgctcctcctcagcagc C/G tcctgctcctcctcagc	3097
ALDH1A2	54	intron4+456	cctgctcctcctcagcagc G/A cctgctcctcctcagc	3098
ALDH1A2	55	intron4+1952	tcctgctcctcctcagcagc C/G tcctgctcctcctcagc	3099
ALDH1A2	56	intron4+2079	cctgctcctcctcagcagc C/T cctgctcctcctcagc	3100
ALDH1A2	57	intron4+2510	tcctgctcctcctcagcagc C/G tcctgctcctcctcagc	3101
ALDH1A2	58	intron4+2840-2851	tcctgctcctcctcagcagc (T)11-13 cctgctcctcctcagc	3102

遺伝子名	No.	存在位置	配列	配列番号
ALDH1A2	59	intron4+7231	aataggatcacaaatcacaa A/T gatagtgttcagatcctaa	3104
ALDH1A2	60	intron4+7958	taaaatcgtttttattgtta C/T taggtatataaaatttgcta	3105
ALDH1A2	61	intron4+8090	tctgtttttctactgttta C/T agattgcttgctactctca	3106
ALDH1A2	62	intron4+12823	tgttagcctgtagctaaatg C/T ttccaatagtgaacgg	3107
ALDH1A2	63	intron4+12939	atgaggtccgactttaaga T/C ttgtclacattttcttcc	3108
ALDH1A2	64	intron4+14935	tattgttgaggttctttta T/G aaatggactttaccttct	3109
ALDH1A2	65	intron4+15321	gcatttgggtgtctgagaga C/T atctccagaaatagctata	3110
ALDH1A2	66	intron4+15412	tticaagttttttctgttt T/G ttttttttttttttttttt	3111
ALDH1A2	67	intron5+1888	aatccaaacatctgtacttt G/T tagtgagacaagattttgt	3112
ALDH1A2	68	intron7+9166	gaaagctactttatitcaaa G/A ataaaagtattttaagaaaa	3113
ALDH1A2	69	intron7+9914	aagctggagaaatctagg C/T ttctcccaacagtgtttcc	3114
ALDH1A2	70	intron7+18942	ttggaggggaaactaatccc G/A tgacttctaggttctctct	3115
ALDH1A2	71	intron7+19820	ttcaccctcttttttaggtt A/G ggggggttggtgtctacag	3116
ALDH1A2	72	intron7+19826	cctcttttttaggttagggg G/A gtggcttgctacagttttag	3117
ALDH1A2	73	intron7+19913	cgtgaatcattcagttttt A/G tttaaaatccagtttgaa	3118
ALDH1A2	74	intron7+(20110-20111)	catgattttattcttaacta (ACTA) tgctaagtcaaaagttctgc	3119
ALDH1A2	74	intron7+(20110-20111)	catgattttattcttaacta tgctaagtcaaaagttctgc	3120
ALDH1A2	75	intron7+21857	acaatgaapaattaagaagg A/T gaaggggggaagaagcagaga	3121
ALDH1A2	76	intron7+21929	tacaagacacagggcatottt A/G actagtttactgggtctct	3122
ALDH1A2	77	intron7+23308	ggctttgacttcgaaacct G/T tggattatacaaaagtactg	3123
ALDH1A2	78	intron7+23554	gacatttggtgaaaaccagg G/T ttgttaggtgtctctgtcc	3124
ALDH1A2	79	intron7+(23701-23703)	catctgagatttgccttctg GTG/Δ tttaacgggttagtggtgc	3125
ALDH1A2	80	intron7+26479	gatacatgaacaatttctt T/C atctctatgatacttctca	3126
ALDH1A2	81	intron7+26561	taaggcccaaatcgagtg T/C tgaatctccagtttaattt	3127
ALDH1A2	82	intron7+26662	tttcttagtcccttccatca C/T gaactaaagctgtctcca	3128
ALDH1A2	83	intron8+76	tttatctctccactttgat G/A gacactagcaaaagatatt	3129
ALDH1A2	84	intron8+(700-711)	accattctcattcagttatc (T)11-12 cctccactttgttccaggc	3130
ALDH1A2	85	intron8+724	tttttttccctccactgt T/C gccagcgagagctgtttcc	3131
ALDH1A2	86	intron8+800	cagatttggttaatttcagc C/A ccagcttggaaatttgcagag	3132
ALDH1A2	87	intron8+1251	gatttcgtgaaattgaga G/A gatctggcaacctgggctc	3133
ALDH1A2	88	intron8+1627	ggccctcccccaggcaagg G/A gtggaacatggctgtttcc	3134
ALDH1A2	89	exon9+141	tgagggggccaaggagcc G/A tagtgggggtccctttgac	3135
ALDH1A2	90	intron9+778	aaccagctggagagatccc T/C tgtagcttgaaggtgag	3136
ALDH1A2	91	intron9+801	tagcttgagaaagttagga A/G gtgaagggtggtgctcattc	3137
ALDH1A2	92	intron9+868	tctgaaggcctcgtgactt T/C agtgggtggggaggccac	3138
ALDH1A2	93	intron9+1338	aatttttgctctttttat A/G tcaatacaacttgcatagtt	3139
ALDH1A2	94	intron10+(227-229)	ctaigtcttatgattatta TTA/Δ gccaacagaaatcagaat	3140
ALDH1A2	95	intron10+316	ctaagtgtgtgtcactggga T/C gtaaccaggagaggaatc	3141
ALDH1A2	96	intron10+368	ctttacatctgtgcaagaga G/A ggacaaggagcaaatcagcc	3142
ALDH1A2	97	intron10+660	gtaaactgtcattgaaatgt G/A gaaagcaggttaaaggaaatga	3143
ALDH1A2	98	intron11+104	tggggataccaaaagcaac C/T aaagttaaccagaaaagggg	3144
ALDH1A2	99	intron11+229	aaacttctaaaagaatacc A/G tggcagtcagattatgtct	3145
ALDH1A2	100	intron12+117	catcattcaacaacattt C/T gtggagcacatgctactata	3146
ALDH1A2	101	intron12+691	gatagggaagatcactgtga A/G ctggaataatctgggaacc	3147
ALDH1A2	102	intron12+1934	catctgtctagattgcata T/C ttgtttgtttgtttgtct	3148
ALDH1A2	103	intron12+1973	ctacttaccctcaaacatg T/A ttctcttttttaaatgacc	3149
ALDH1A2	104	intron12+2722	ccagagtgactcactgtatc C/A tcaactgcccaggaccacag	3150
ALDH1A2	105	intron12+3855	cacttgaagcaaccataat T/C gtgaggtttctgtgctgta	3151
ALDH1A2	106	intron12+4185	ttgttttaagcgaatgaac T/C atcggacaggagaaacagcc	3152
ALDH1A2	107	intron12+4991	acaggaaaccttagcatgc A/G acccactcccaccctccgtc	3153
ALDH1A2	108	intron12+(5018-5019)	cccaccctccgtcttgggg (G) aggaagcacactactgtcc	3154
ALDH1A2	108	intron12+(5018-5019)	cccaccctccgtcttgggg aggaagcacactactgtcc	3155
ALDH1A2	109	intron12+(5051-5052)	actgtcccaagaactaata (A) ctgaaccagtgctgctgt	3156
ALDH1A2	109	intron12+(5051-5052)	actgtcccaagaactaata ctgaaccagtgctgctgt	3157
ALDH1A2	110	intron12+(5300-5302)	ttaaagttttaaaaaactt CCT/Δ taaaactactcatgagtg	3158
ALDH1A2	111	intron12+5405	catccagagactgtctgtc G/C caggtgataaactgcacctc	3159
ALDH1A2	112	intron12+5435	aactgcacctcccaggact C/A ccgctgcactcacatgcagc	3160
ALDH1A2	113	3'flanking+449	tttggccgggaacaatttt T/C caaggttgtaaggccaatt	3161
ALDH1A2	114	3'flanking+597	acctgggatattctgaccc A/C atctggttttttttacccta	3162
ALDH1A2	115	3'flanking+669	atagagactggaagtcata T/C gtgcagttcaccgcttctga	3163

遺伝子名	No.	存在位置	配列	配列番号
ALDH1A2	116	3'flanking+1122	cggtgccactgagctcctc T/G gtcacacccccattcttgc	3164
ALDH1A2	117	3'flanking+2214	tcgacgtgtgaaaagaatc T/C gtaaatggtgaccgtactac	3165
ALDH1A3	1	5'flanking-1425	cagttatgacgagcgatc C/T ggtcaaggctgccccgctcg	3166
ALDH1A3	2	5'flanking-1379	ccattatcccccttcccg C/T ctcagctgtgcactccaggc	3167
ALDH1A3	3	5'flanking-1270	aacttaccctctatccagc T/A ctatccagaaggacaccagg	3168
ALDH1A3	4	5'flanking-(1214-1213)	acggaggcctcaaaacagga (GGA) aaataaggagacccctcccc	3169
ALDH1A3	4	5'flanking-(1214-1213)	acggaggcctcaaaacagga aaataaggagacccctcccc	3170
ALDH1A3	5	5'flanking-1103	gcacagcttttgcaggagt C/T cgtgcctccggtctttgttc	3171
ALDH1A3	6	intron1+986	gccttaacttccccacct T/G ggcctctctgtattttgtc	3172
ALDH1A3	7	intron1+1462	gtacaggattcaaaatact G/A tatatagaaccagacagta	3173
ALDH1A3	8	intron1+1661	cctgttctctgtgtgtgc G/A caacctttgacagttaaagg	3174
ALDH1A3	9	intron1+2360	agaggatagaagtccttct A/G atttagagggcctcttctt	3175
ALDH1A3	10	intron1+2516	tgaaaacatatctttttga G/A tttagctgagtggcctgtg	3176
ALDH1A3	11	intron1+2624	cctgagacacattacagtc C/T gtcctgcttccatgtcttc	3177
ALDH1A3	12	intron1+3255	tttcatctttctacaatgg G/C cccctctctgtgtgctcact	3178
ALDH1A3	13	intron1+(3643-3656)	gcttcagaggtttttgtgg (T)12-14 aacattctatcaactttta	3179
ALDH1A3	14	intron1+4265	ccaaaagccctctctttta T/C atgacattaataagacaatt	3180
ALDH1A3	15	intron1+5187	caagatgtagaagcgtcac C/T taaggtccttagcatgttga	3181
ALDH1A3	16	intron2+43	ctctaagtaattcaattat G/T atgaccaaagggtaaagaa	3182
ALDH1A3	17	intron2+127	cagggtcctgggttagctgc G/C gaattggcatgtgtgtcca	3183
ALDH1A3	18	intron2+(285-300)	aggaaggttttttttttc (T)16-17 atcaattattggacotgga	3184
ALDH1A3	19	intron2+778	cgtgtcagagtaggttgg A/G ttttatcttggccatgagt	3185
ALDH1A3	20	intron2+1216	actcggtagagtcactctc G/C ctggtgtccacatccactc	3186
ALDH1A3	21	intron3+81	accatgggtgtgtggaaaa A/C gatcacggctcctgtttgt	3187
ALDH1A3	22	intron3+236	gctcagctcttgacaaagt T/G gtgtctataggcagttgg	3188
ALDH1A3	23	intron3+1467	ggcccggttttagggaggga G/T atctcctttgtggccttga	3189
ALDH1A3	24	intron3+1725	cccatgttcccggttag A/G gtagctccctccagggtaa	3190
ALDH1A3	25	intron3+3777	gccagaagttagtgcoccca A/G ttcagctgtgcattactgg	3191
ALDH1A3	26	intron3+3829	caagtaactgggcttagc G/C tccgtgcctgcacctgaag	3192
ALDH1A3	27	intron3+4299	tcacttccacagccacact G/A gccagcctggccagagagga	3193
ALDH1A3	28	intron4+84	agggccccctgactgttt G/C cctaaggcaccattcccaac	3194
ALDH1A3	29	intron4+126	ccactccctctcacaattgt A/G ctgccaatcttcttctaag	3195
ALDH1A3	30	intron6+(290-291)	taggaattttcagggggg (G) tcaaccaagaggagccaaa	3196
ALDH1A3	30	intron6+(290-291)	taggaattttcagggggg tcaaccaagaggagccaaa	3197
ALDH1A3	31	intron6+705	aacagctgtgtatgaccaa T/G ttccactttctttgttga	3198
ALDH1A3	32	intron7+56	ggggcgtgtatttgacac C/T gtgagcttttctttgacag	3199
ALDH1A3	33	intron7+1107	gatgctgtatctctctgg A/G gacagacactgcccgttga	3200
ALDH1A3	34	intron7+1610	aagagccacacagaccac C/G cctactgggctgttggat	3201
ALDH1A3	35	intron7+1820	cacctgtaagtggagcgct T/G agaccaaaggatccaggatg	3202
ALDH1A3	36	intron8+963	gagaaggacagaggagga C/T acaggctctcaggaaggaa	3203
ALDH1A3	37	intron8+1824	accattcttatccactaagc G/A tgcctcccaagatcttattc	3204
ALDH1A3	38	intron8+2364	cgctccctgcctccctccc C/A tccagtgacttggcagtg	3205
ALDH1A3	39	intron9+24	atccccctgtgtgtgaa A/C ccatgtgtctgtotagagg	3206
ALDH1A3	40	intron9+91	gcctcagggctccctctcg T/C gaaaggaatgctgacctgc	3207
ALDH1A3	41	intron9+219	actgagcagtgaggaggg G/C gctattccagggcagaagg	3208
ALDH1A3	42	intron9+435	ccagacggagagagcctgg G/A caggagaatgtatctccagg	3209
ALDH1A3	43	intron9+1472	ttgacttttagggccagata C/T accgatttcttccagagaa	3210
ALDH1A3	44	intron9+2038	taacaatgtgttctacgg G/A ctctccaggaggtgtgagt	3211
ALDH1A3	45	intron9+2124	caacacaggtctccagatg G/A catatgccagcagccagg	3212
ALDH1A3	46	intron9+2154	agcagccaggagagcctgc G/C gttggcgagccctgtgt	3213
ALDH1A3	47	intron9+2197	ctttggccccccagggagg G/A gaagagcagctcagcagcat	3214
ALDH1A3	48	intron9+2466	ttcttagttctctatgttc C/T ctctagaatgttttctgtg	3215
ALDH1A3	49	intron9+3655	gattgtcaagtggcatga C/T ggtttatgccctctctctg	3216
ALDH1A3	50	intron9+3954	gggtgcgttttgacaactg G/G tccgtagcgtttcacaagc	3217
ALDH1A3	51	exon10+88	tggatgcgggggtcagcc A/G tggagacaagggtcttctc	3218
ALDH1A3	52	intron10+8	tgccaaaggagggtacaag G/A gggctgtggcaaggctacga	3219
ALDH1A3	53	intron10+307	ctctctgtatttttaacaca A/C ccggtccccagtcagtcac	3220
ALDH1A3	54	intron10+378	gtgggttttgccaggaatca G/A ttaagaacctgtggattca	3221
ALDH1A3	55	intron10+975	aattattgtctactcttcc G/G ctggtagtattatgaaac	3222
ALDH1A3	56	intron10+1088	cagtgccaggagccagggg G/T cttctccagatgactctgag	3223

遺伝子名	№	存在位置	配列	配列番号
ALDH1A3	57	intron11+105	ttgtttacattgtatattat A/G taccaagccctgtctcagt	3224
ALDH1A3	58	intron11+274	egggctccagtaacctgtgcc T/G gtggccctgtgtctactg	3225
ALDH1A3	59	intron11+1088	cagtgccaggagccaggggg T/A ctctccagatgactctgag	3226
ALDH1A3	60	intron12+96	ctccaatctgtgacacccc G/A tccccccacaccgccgctc	3227
ALDH1A3	61	intron12+5642	tcgtgctaactgtctcttc T/C ctcaigcccttaggctggc	3228
ALDH1A3	62	exon13+104	ggctccttccotcaaacatc G/C gacggcggaaatgtggcagat	3229
ALDH1A3	63	exon13+281	ataggttctgtgtaaatcg C/T agtctgcctggggaggag	3230
ALDH1A3	64	3'flanking+743	gtggcaggaaactgttagga G/A aaggatattttccctcattt	3231
ALDH1A3	65	3'flanking+1145	gcctccacgtacccccacc A/G cctcaggaggggtcattcca	3232
ALDH1A3	66	3'flanking+1185	aacctagggtctgagaatc T/C gggtaggattaccagcaaaa	3233
ALDH1A3	67	3'flanking+1600	acaccccgccctgcaaatg T/C tgggaactgtcggtagcaa	3234
ALDH1A3	68	3'flanking+1847	caggagccctgcggctgccc C/G ggttctgtgaatggcagtg	3235
ALDH1L1	1	intron1+252	cgcagcggcaggactggccc G/C ccaggagctgcccggccgc	3236
ALDH1L1	2	intron1+544	ctcaggaggtgcgtggagt G/T ccagctccagccactgcagt	3237
ALDH1L1	3	intron1-6596	cagattttcttaagggtca C/G tagccactgaggtattttt	3238
ALDH1L1	4	intron1-6513	caattatggtttatcttagg G/A acatgtttatagagtgta	3239
ALDH1L1	5	intron1-6478	atagtattcttactagctt G/A cattctaaattttgtccct	3240
ALDH1L1	6	intron2+240	gtggcattaggtctctggag A/G agggctatagagaagccag	3241
ALDH1L1	7	intron2+1326	gaggagggagaccggaggga G/C agccagtcagctcaggcccc	3242
ALDH1L1	8	intron3+386	gtcctactctaaactccat G/A ccgtgctctggcagcaca	3243
ALDH1L1	9	intron4+271	ggccccgttcaatagcaaa G/C aaggctaaaggcaggagctg	3244
ALDH1L1	10	intron4+356	taggtattctattttctctc C/T ttcaactgttgattctcct	3245
ALDH1L1	11	intron4+608	gtgctctgataggtctctc A/C gtcacatgcttctgtctgg	3246
ALDH1L1	12	intron4+664	ggtcacatggctgagcggc A/G gggcagctcagtcacctggg	3247
ALDH1L1	13	intron4+785	gagggtgctgtgcccctgcc C/G gggacaggtctggcaggagc	3248
ALDH1L1	14	intron4+874	ccctggggagcccttgctgt T/G tggcgccagccggagagca	3249
ALDH1L1	15	intron4+1349	tcctcaggtctctgtctac G/A tggccagagctccttggt	3250
ALDH1L1	16	intron4+1789	ctggggtctgggaaggaggca G/A ggtcctattgtctgggatag	3251
ALDH1L1	17	intron4+1815	ggcagggtcctattgtctgg G/A atagcaaccactggatctc	3252
ALDH1L1	18	intron5+272	aaagccacagggagataag A/G gtggaggttaggggcaaaa	3253
ALDH1L1	19	intron5+301	tagggggcaaacactcagcc G/A tagtgcagcagctcttcaag	3254
ALDH1L1	20	intron5+343	caaggtgtgaggagcagtg G/A ggtctctggagcaatagcca	3255
ALDH1L1	21	intron6+926	cctgctgggtctacttgctt C/T ggggctcttctcaccac	3256
ALDH1L1	22	exon7+41	aacgtgtgaacacttcaggcc T/C ggtgcccgaggagagcgtt	3257
ALDH1L1	23	intron7+305	cctagaalccagagagaagcc G/T tccaggggagcctgggttca	3258
ALDH1L1	24	intron7+837	gtccggacaaaccccatggg C/T gtgtatccccagccgtgtt	3259
ALDH1L1	25	intron7+866	ccagccgtgtgtctgtctc G/T ggcotaccagagtgaggcgt	3260
ALDH1L1	26	intron7+884	tcgggctaccagagtgagg C/T gtggcagtaggggctggc	3261
ALDH1L1	27	intron7+1118	aatgttccagaaatcatgc G/C aggcagtaaggccagaggaa	3262
ALDH1L1	28	intron7+1168	aaagtaeaggttcaggagaa G/A tctagcctgggtctgctccc	3263
ALDH1L1	29	intron7+1451	cagggcaccacagcatctg T/C ccagagacctgcaagacag	3264
ALDH1L1	30	intron7+1489	caggatgcgaagaaggcaa T/C taagtgtctlaagggaagc	3265
ALDH1L1	31	intron7+1579	tcagggtggggggagtga G/A gagagaaccagctgagcacac	3266
ALDH1L1	32	intron7+1691	ctgctgggttttagcttgc A/C gaaagctccagaacatcttt	3267
ALDH1L1	33	intron8+2627	eaagaggagagccgggggtg C/T ttgtccagggttggggga	3268
ALDH1L1	34	intron8+2646	gcttgcagagggttggg G/A aactgttctgattgggct	3269
ALDH1L1	35	intron8+2925	ctgctgccctccataggtcc C/G agactgaatccttcagagga	3270
ALDH1L1	36	exon9+4	cagctctgtcttgcagagt G/T ttggcagcggatctctccc	3271
ALDH1L1	37	exon10+109	cagctgttagtgaggagct G/T cgaggagacgtggggagg	3272
ALDH1L1	38	intron10+(671-672)	tggcattttcctctgtctga (AG) gtctcttagccccaccctaa	3273
ALDH1L1	38	intron10+(671-672)	tggcattttcctctgtctga gtctcttagccccaccctaa	3274
ALDH1L1	39	intron11+8	caccgatggaagtgtgagtg C/A agggcagcaccctctctcc	3275
ALDH1L1	40	intron11+447	atgagccaaagcagcctat G/A gtatgacacacgtgaacat	3276
ALDH1L1	41	intron11+601	ctcaaatgagtcatttgag A/G ggaagtaatgaagcctcat	3277
ALDH1L1	42	intron11+639	catctgcaaaaggagaggga G/A gggtagggacacagacagg	3278
ALDH1L1	43	intron12+684	tcctgggagagagagggtg C/T gggcagatgagccggaaca	3279
ALDH1L1	44	intron12+767	cgctcagggttcgaagcca A/G gttatggctgtgtcccaag	3280
ALDH1L1	45	intron12+1014	tcataggttccagtcctt C/T gcaagcccctcaattctaga	3281
ALDH1L1	46	intron12+1359	ctggttctgctcagctcag C/T acagcagaggctgggtctag	3282
ALDH1L1	47	intron12+1734	ggtgtccaggtctgtgtg G/T tcagtagggccggccagcc	3283

遺伝子名	No.	存在位置	配列	配列番号
ALDH1L1	48	intron12+1901	ttcagcagcctaacgtgaatt G/A acaatagaatagtcctgcaa	3284
ALDH1L1	49	intron12-470	gggatggggccacotctcca T/C ctclgagatgccagctca	3285
ALDH1L1	50	intron12-334	aaggcgagcctcttgggcca T/C gaccccttgcgtctgcag	3286
ALDH1L1	51	intron12-325	ctcttgggccaatgacccctt T/C gctgtotgagcaagtgggt	3287
ALDH1L1	52	intron12-221	gaaggaagcaggggaagtc G/C aggaagagagaggggacag	3288
ALDH1L1	53	intron12-4	cccgtctccctcaccctgg T/C caggttggcagatctcatg	3289
ALDH1L1	54	intron13+34	tcccaccagtgtagcaca T/C gcagactggcccagccatg	3290
ALDH1L1	55	intron13+58	gactggcccagccataggg A/G gaactccaagggcagcacag	3291
ALDH1L1	56	intron13+125	ccacaactggggcttggaa T/C gacacctgtttattagcttg	3292
ALDH1L1	57	intron13+126	cacaactgttgcttggaa G/A acacctgtttattagcttg	3293
ALDH1L1	58	intron13+281	acctgcactcagacaggttc T/G ggtgtgacagagttcagtt	3294
ALDH1L1	59	intron13+299	tcgggtgtgacagagttca A/G ttcgtgtgagtcagagct	3295
ALDH1L1	60	intron14+121	cattatataaacagccatcc A/G tctgcttctgagcacctgc	3296
ALDH1L1	61	intron14+167	gccaggcattgttgaagga C/T ttgaggacaattgttttaa	3297
ALDH1L1	62	intron14+205	taactctccagtaacactgg A/C tcagtcaggtccaaggtggg	3298
ALDH1L1	63	intron14+219	cactggatcagtcaggtcca C/G ggtgggaacaagagtaaac	3299
ALDH1L1	64	intron14+2275	tctcatctgtgatgacccg T/C cagacctctgctccagcct	3300
ALDH1L1	65	intron14+2431	agatgactgaatgacaga C/G ctgagagcccagcccagg	3301
ALDH1L1	66	intron14+2660	agccaagcatttcttgggga C/T accaagaacacctgtgtgtg	3302
ALDH1L1	67	intron14+2740	aactccaccctcaccgtcca T/C gcagctcccagggagctca	3303
ALDH1L1	68	intron14+2756	tccatgagctcccccagga T/C gtcagagggcagagggagg	3304
ALDH1L1	69	intron14+2805	ccgcacagcagggagaatgg C/T ccaggggagggagggacgg	3305
ALDH1L1	70	intron14-(3636-3637)	tctcctgggtgtgtgtggg (G) tctggggcagctcccctatc	3306
ALDH1L1	70	intron14-(3636-3637)	tctcctgggtgtgtgtggg tctggggcagctcccctatc	3307
ALDH1L1	71	intron14+4347	tccagcagagaacacagcagg C/T gtagctgaccttcagaggg	3308
ALDH1L1	72	intron15+380	atgtcccttatgtgtgttcc A/G agaccagaagtcctggagag	3309
ALDH1L1	73	intron15-(1055-1056)	gcccaactctcagctactc (C) tcccagctgtgtctggct	3310
ALDH1L1	73	intron15-(1055-1056)	gcccaactctcagctactc tcccagctgtgtctggct	3311
ALDH1L1	74	intron17+15	gaaaaggtctgctgtggg G/C tggagcagaggggggctgc	3312
ALDH1L1	75	intron17+44	aggaggggctgtgtgtgtg C/T gctggagacatggcagtgct	3313
ALDH1L1	76	intron17+51	gctgtgtgtgtgtgtgtgtg G/A acatggcagtgctgtccaca	3314
ALDH1L1	77	intron17-(2224-2223)	ctgtgtcatctcccagact CT/Δ gtcactaaaccacaataga	3315
ALDH1L1	78	intron18+140	agctgtcatcacaaagcatagc G/A tggcaggcagcaggttagg	3316
ALDH1L1	79	intron19+(51-52)	tgttccctgggagcagcgc GC/Δ ctgctggaggggllagag	3317
ALDH1L1	80	intron19+399	tcaggtcagcctggccctga C/A catggacagggccctggag	3318
ALDH1L1	81	intron19+1794	gtcctgtctggggctttaa G/C gtagtcagagacttccaca	3319
ALDH1L1	82	intron19+1969	tgtatgggtgtgtgtgtgtg G/T agcagagcagggagcagaga	3320
ALDH1L1	83	intron19+1972	tcgggtgtgtgtgtgtgtgtg A/G caggacagggagcagagata	3321
ALDH1L1	84	intron19+2083	tgaagagcagaggggtgt G/T ccgggtgtgtgtgtgtgtgt	3322
ALDH1L1	85	intron19+2119	acacctgtgtgtgtgtgtgtg C/T tgttaggggtgtgtgtgtgt	3323
ALDH1L1	86	intron20+1388	ttaccctcttccactccg C/T tggactgtgtgtgtgtgtgt	3324
ALDH1L1	87	intron20+1564	cccagggaacaggaacagt G/A agagccatcaccccgccttg	3325
ALDH1L1	88	intron20+1873	tcagtgttaaacatcattt G/A tttatgtatgaaaattttg	3326
ALDH1L1	89	intron20+2427	actaggatgtgtgtgtgtgtg G/C gatcaggtgtgtgtgtgt	3327
ALDH1L1	90	intron20+2458	cagctctgtacactgccaac C/T ggcggccatttccctcaa	3328
ALDH1L1	91	intron20+2544	ccaggtgggagagccatctg C/T agcgtgtgtgtgtgtgtgt	3329
ALDH1L1	92	intron20+2573	gacccccatcacacgggtgc C/T gtgacccaggtgtgtgtgt	3330
ALDH1L1	93	intron20+2574	acacccatcacacgggtgc G/A tgacccaggtgtgtgtgtgt	3331
ALDH1L1	94	exon21+33	agccaactgtttcacagac G/A tggagaccacatgttcata	3332
ALDH1L1	95	exon21+87	ccttcgggctgtgtgtgtgtg A/G tctctgtgtgtgtgtgtgt	3333
ALDH1L1	96	intron21+323	ccatgcatttaaacaccccc C/G acactgagtgacttgaata	3334
ALDH1L1	97	intron21+361	ataatcagagattatttta C/G tcacagtgctgtgtgtgtgt	3335
ALDH1L1	98	intron21+478	gtcttgcggaggttctct C/A gctgtgtgtgtgtgtgtgtgt	3336
ALDH1L1	99	intron21+1086	caacccaactcttcccccg C/T gctgagcccgccacatttt	3337
ALDH1L1	100	intron22+235	gggctctgaggagacactcc A/C gccaggagcactggggcc	3338
ALDH1L1	101	intron22+313	atagcaggaggaggttgcc G/A tgaagaccagggcccggtg	3339
ALDH1L1	102	intron22+1214	tgggcccacttatgaatct C/C cccaggttccctcagctccc	3340
ALDH1L1	103	intron22+1226	tgaactctcccgaggttccc T/C cagctccctcctaaccctag	3341
ALDH1L1	104	intron22+1623	gggcttccactgtccaga C/G aaggcgtgtgtgtgtgtgtgt	3342
ALDH1L1	105	intron22+1698	attctggggagctgtgtgtgt G/A ctatccactgccaggataa	3343

遺伝子名	No.	存在位置	配列	配列番号
ALDH1L1	106	3'flanking+145	ggagagcagcaggaaatggg C/T gtgggtcatctcaggcccca	3344
ALDH1L1	107	3'flanking+239	tgggaacaggtgggaagac G/A gggattgagctggatgagcc	3345
ALDH1L1	108	3'flanking+288	ggagcagctcagactccct C/T agcagatgggcccggccct	3346
ALDH1L1	109	3'flanking+1513	aggctcggctcagaccggg A/C gtgctcctggcatgtccagg	3347
ALDH1L1	110	3'flanking+1707	cggctggacttgcctagca G/T gtgcaottataccagaaca	3348
ALDH1L1	111	3'flanking+1709	gtgggacttgcctagcacg C/T gccacttataccagaacaga	3349
ALDH1L1	112	3'flanking+1745	acagatgagtcactgtcac C/T gcttctgagttcccttgt	3350
ALDH1L1	113	3'flanking+1843	ctgctctcagcccacagcc G/A ggccgctcacactcctccca	3351
CYP3A4	1	intron2+(754-763)	cacaaaatgagtttgggg (T)9-11 acacaaaggcgaatcacat	3352
CYP3A4	2	intron7+258	accactaatcaactttctgc C/T tctatggattgcctattct	3353
CYP3A4	3	intron7+894	tgcgtatcactgctgtag C/T ggtgctccttatgcatagac	3354
CYP3A4	4	exon9+(32-33)	ttccttcagctgatgattga (A) ctctcagaattcaaaagaaa	3355
CYP3A4	4	exon9+(32-33)	ttccttcagctgatgattga ctctcagaattcaaaagaaa	3356
CYP3A4	5	intron10+12	cccaataaggtgagtggatg G/A tacatggagaaggaggagg	3357
CYP3A4	6	intron10+459	agacatgtacttttttt T/ $\Delta$ gaaggtaacaatcacttgc	3358
CYP3A4	7	intron10+608	agccgtctcgaatgtctccc C/T acttcataactcctccacac	3359
CYP3A4	8	intron12+2487	tttttgcacattactccat A/G gagatcagaatatcactctg	3360

## 【0036】

表1において、「遺伝子名」の欄には薬物代謝酵素をコードする遺伝子名を記載した。「配列」の欄においてアルファベット大文字で示した塩基がSNP情報である。「/」を付した2つの塩基は、その塩基のホモ又はヘテロのSNPを示す。例えば、「A/G」と表示した場合は、アレルがA/A若しくはG/Gのホモ、又はA/Gのヘテロであることを意味する。表中の配列は、SNPの前後20塩基を示している。但し、括弧を付した塩基（例えばABCB4の第26番の(T)）はインサートによる多型を、 $\Delta$ （例えばNAT2の第10番目）は1塩基の欠失による多型を意味する。また、配列番号674に示す配列中、nはVNTRであり、(cctgy)<sub>X</sub>（Xは1～50の整数）からなる繰り返し配列を表している。また、括弧に数字を付した塩基は、その括弧内の塩基がその数字の数だけ繰り返されていることを意味する。例えば、配列番号1552の配列（表1、ABCB11の第55番）において「(T)9-12」とあるのは、Tが9～12個の繰り返し配列であることを意味する。

## 【0037】

「存在位置」は、SNPのゲノム上の位置を示す。5'フランキング（flanking）領域、イントロン（intron）領域、3'フランキング（flanking）領域のSNPsの存在位置は、エキソン/イントロン結合点（exon/intron junction）の最初のイントロンの塩基配列を1番として数えた。エキソン領域のSNPsの存在位置は、エキソン/イントロン結合点の最初のエキソンの塩基配列を1番として数えた。（+）表示又は無表示は3'下流方向に、（-）は5'上流方向に向かって数えた数字を示

した。「No.」の欄に記載された数字は、各遺伝子の遺伝子地図（図9～141）上のSNPの位置を示す番号と対応する。

#### 【0038】

#### 4. オリゴヌクレオチドプローブ又はオリゴヌクレオチドプライマーの作製

本発明の検出方法においてプライマー及び/又はプローブとして使用されるオリゴヌクレオチドは、例えばSNPを検出するときは表1に示す塩基配列（配列番号1～3360）を基本とし、これらの配列自体を合成してもよく、これらの配列の一部を含むように設計し合成してもよい。但し、その塩基配列中には必ずSNP（表1の「配列」の欄にアルファベット大文字で表示した部分）が含まれるようにする。また、本発明においてはこれらの配列の相補鎖も含まれる。

#### 【0039】

SNPを例に説明すると、SNP部位は、プライマー又はプローブの塩基配列の3'若しくは5'端に存在するように設計し、あるいは、相補的な配列の3'若しくは5'端に存在するように設計し、又は前2者の3'若しくは5'端から4塩基内、好ましくは2塩基内に存在するように設計する。あるいは、オリゴヌクレオチドの塩基配列全長の中央にSNPが存在するように設計する。「中央」とは、SNPの塩基よりも5'端に向かう塩基の数と、3'端に向かう塩基の数とがほぼ同数となる中心部の領域をいい、オリゴヌクレオチドの塩基数が奇数の場合は、中心部の5塩基、好ましくは中心部の3塩基、さらに好ましくは最も中心部の1塩基をいう。例えば、41個の塩基数の場合は、第19番目～第23番目、好ましくは第20番目～第22番目、さらに好ましくは第21番目の塩基が「中央」となる。また、オリゴヌクレオチドの塩基数が偶数の場合は、中心部の4塩基、好ましくは中心部の2塩基をいう。例えば、40個の塩基数の場合は、第19番目～第22番目、好ましくは第20番目の塩基が「中央」となる。

#### 【0040】

多型部位が複数の塩基で構成される場合は、プローブ又はプライマーにその配列が含まれるように設計する。特に、プローブ又はプライマーのDNAと相補する5'末端側又は3'末端側の1～4塩基のいずれか（「対応塩基」と称する。好ましくは5'末端又は3'末端の塩基。）が、当該複数の塩基の最も端の塩基に対応

するように設計する。例えば、後述のインバーダー法において表1のNDUFA7の第12番（配列番号828）に示す遺伝子多型（CAGAGGCT）を検出するためにインバーダープローブ及びアレルプローブを作製する場合は、図4aに示すアレルプローブについては、対応塩基（図では塩基として「T」を例示してある）の位置が「CAGAGGCT」配列の最も左の「C」となるように設計し、インバーダープローブについては図4bに示す「N」の塩基が「CAGAGGCT」配列の最も左の「C」を「N」（A、T、CまたはGのいずれか）に置換して設計する。逆に、インバーダープローブの対応塩基の位置を「CAGAGGCT」配列の最も右の「T」として設計する場合には、その塩基を「N」として、アレルプローブの対応塩基を「T」に設計する。なお、インバーダープローブおよびアレルプローブの対応塩基を「CAGAGGCT」配列のいずれかに設定することも可能である。

#### 【0041】

塩基配列の長さは、少なくとも13塩基、好ましくは13塩基～60塩基、さらに好ましくは15～40塩基、最も好ましくは18～30塩基となるように設計する。このオリゴヌクレオチド配列は、被検遺伝子を検出するためのプローブとして使用することができ、また、フォワード（センス）プライマー及びリバース（アンチセンス）プライマーのどちらに使用してもよい。

#### 【0042】

また、オリゴヌクレオチドは、ゲノムDNAとハイブリダイズする領域とハイブリダイズしない領域とがタンデムに連結したものであってもよい。連結の順序はどちらが上流でも下流でもよい。このオリゴヌクレオチドのうちハイブリダイズする領域は、表1に記載のSNPを含む配列情報から設計し、ゲノムDNAとハイブリダイズする領域の最も5'側又は3'側の配列がSNPとなるように作製する。上記オリゴヌクレオチドのうちハイブリダイズしない領域は、表1に記載のSNPを含む配列とハイブリダイズしないように、ランダムに配列を設計する。このオリゴヌクレオチドは、主としてインバーダー法によるSNPの検出に、プローブとして使用することができる。

#### 【0043】

さらに、本発明において使用されるプライマーは、表1に示す塩基配列のうち



、そのSNPに起因する機能変化、有効／無効の判断、副作用の有無を調べる目的で、PCRにて増幅される配列の中にSNPを含むよう設計される。この場合の、プライマーの長さは、少なくとも15塩基、好ましくは15～30塩基、さらに好ましくは18～24塩基の長さを有するように設計する。このときのプライマー配列は、増幅断片が500bp以下、好ましくは100～300bp、さらに好ましくは100～150bpとなるように鋳型DNAの領域から適宜選択する。

#### 【0044】

以上のように設計されたオリゴヌクレオチドプライマー又はオリゴヌクレオチドプローブは、公知の手法により化学合成することができるが、通常は、市販の化学合成装置を使用して合成される。

なお、プローブには、予め蛍光標識（例えばFAM, VIC, Cy3等）を付加して作業の自動化を図ることも可能である。

#### 【0045】

上記オリゴヌクレオチドは、ポリメラーゼ（例えばTaqポリメラーゼ）、緩衝液（例えばTris緩衝液）、dNTP、蛍光色素（VIC、FAM等）などと共に、遺伝子多型検出用キットに含めることができる。

#### 【0046】

### 5. 検出

上記のようにして調製されたオリゴヌクレオチドをプライマーとし、DNAポリメラーゼを用いて薬物代謝酵素をコードする遺伝子（鋳型DNA）を増幅する。あるいは、上記のようにして調製されたプローブを鋳型DNAとハイブリダイズさせて、目的の遺伝子多型を有するDNAを検出する。鋳型となるDNAの調製は、公知の手法、例えば塩化セシウム密度勾配超遠心法、SDS溶解法又はフェノール・クロホルム抽出法等により行うことができる。

#### 【0047】

#### (1) PCRによる検出

増幅は、ポリメラーゼ連鎖反応(PCR)により行うことができる。DNAポリメラーゼとしてはLA Taq DNAポリメラーゼ(Takara)、Ex Taq ポリメラーゼ (Takara社)、Gold Taq ポリメラーゼ (Perkin Elmer)、AmpliTaq (Perkin Elmer)、Pfu

DNAポリメラーゼ (Stratagene社) 等が挙げられる。

#### 【0048】

増幅の条件は、85℃～105℃で10秒～40秒、好ましくは94℃で20秒～30秒の変性工程、50℃～72℃で30秒～1分、好ましくは60℃で20秒～1分のアニーリング工程、及び65℃～75℃で1分～4分、好ましくは72℃で2分～3分の伸長工程を1サイクルとしてこれを30～40サイクル行う。但し、鋳型DNA及びプライマーを十分変性させるために、上記増幅サイクルの前に95℃で1分～5分〔但し、Gold Taq ポリメラーゼ (Perkin Elmer) を使用の際は、最低8分～15分、好ましくは10分から12分の変性工程を加えてもよく、また、増幅されたDNAを完全に伸長するために、増幅サイクルの後に72℃で1分～10分の伸長工程を加えてもよい。さらに、増幅産物の検出を直ちに行わない場合は、非特異的な増幅が起こらないようにするために、増幅産物を4℃で保存する工程を加えることが好ましい。このようにして、薬物代謝酵素をコードする遺伝子を増幅することができる。

#### 【0049】

その後は、増幅産物についてアガロースゲル電気泳動を行い、臭化エチジウム、SYBR Green液等により染色し、そして増幅産物を1本又は2～3本のバンド (DNA フラグメント) として検出することにより、薬物代謝酵素をコードする遺伝子中の遺伝子多型を含む薬物代謝酵素の一部分をDNAフラグメントとして検出することができる。アガロースゲル電気泳動の代わりにポリアクリルアミドゲル電気泳動、あるいはキャピラリー電気泳動を実施してもよい。また、予め蛍光色素等により標識したプライマーを用いてPCRを行い、増幅産物を検出することもできる。また、マイクロプレート等の固相に増幅産物を結合させ、蛍光又は酵素反応等により検出する等、電気泳動を必要としない検出方法も採用することができる。

#### 【0050】

##### (2) TaqMan PCR法による検出

TaqMan PCR法は、蛍光標識したアレル特異的オリゴとTaq DNAポリメラーゼによるPCR反応とを利用した方法である。TaqMan PCR法で用いるアレル特異的オリゴ (TaqManプローブという) は、前記SNP情報に基づいて設計することができる。T

aqManプローブの5'末端はFAMやVICなどの蛍光レポーター色素Rによって標識されており、同時に3'末端がクエンチャーQ(消光物質)によって標識されている。(図1)。従って、この状態ではクエンチャーが蛍光エネルギーを吸収するため蛍光は検出できない。TaqMan プローブの3'末端はリン酸化されているため、PCR反応中にTaqManプローブからの伸長反応は起こらない(図1)。しかし、このTaqManプローブを、SNPを含む領域を増幅するように設計したプライマーとTaq DNAポリメラーゼとともにPCR反応を行うと、次の反応が起こる。

#### 【0051】

まず、TaqManプローブが鋳型DNAの特異的な配列にハイブリダイゼーションし(図2a)、同時にPCRプライマーから伸長反応が起こる(図2b)。この際、Taq DNAポリメラーゼは5'ヌクレアーゼ活性を有しているため、PCRプライマーの伸長反応が進む際にハイブリダイゼーションしたTaqManプローブを切断する。TaqManプローブが切断されると、蛍光色素がクエンチャーの影響を受けなくなり、蛍光を検出することができる(図2c)。

#### 【0052】

例えば、図3に示すように、SNP部位がAのアレル(アレル1とする)と、Gのアレル(アレル2とする)が存在すると仮定する。アレル1に特異的なTaqManプローブはFAMで、アレル2に特異的なTaqManプローブはVICで標識する(図3)。2種類のアレル特異的オリゴをPCR試薬に添加し、検出の対象となる鋳型とTaqMan PCRを行う。その後、蛍光検出器にてFAM及びVICの蛍光強度を測定する。その結果、アレルのSNP部位と、TaqManプローブのSNPに対応する部位とが相補的である場合は、プローブがアレルとハイブリダイズし、Taqポリメラーゼによりプローブの蛍光色素が切断されて、クエンチャーの影響を受けなくなり、蛍光強度が検出される。

#### 【0053】

なお、鋳型がアレル1のホモ接合体である場合はFAMの強い蛍光強度を認め、VICの蛍光はほとんど認められない。鋳型がアレル1とアレル2のヘテロ接合体である場合は、FAMとVICの両者の蛍光を検出することができる。

#### 【0054】

### (3) インベーター法によるSNPの検出

インベーター法は、アレル特異的オリゴと鋳型とをハイブリダイゼーションすることによりSNPを検出する方法である。インベーター法では、2種類の非標識オリゴと1種類の蛍光標識オリゴを用いる。2種類の非標識オリゴのうちのひとつは、アレルプローブと呼ばれるものである。アレルプローブは、ゲノムDNA（鋳型DNA）とハイブリダイズして相補二本鎖を形成する領域と、鋳型DNAの配列とは無関係な配列であってゲノムDNAとハイブリダイズしない配列の領域（フラップという）とから構成されており、ハイブリダイズする領域のうち最も5'側又は3'側の位置が、SNPに対応する塩基となっている（図4a）。上記フラップ配列は、後述するフレットプローブと相補的な配列を有するオリゴヌクレオチドである。もうひとつのオリゴは、インベータープローブと呼ばれている。このオリゴは、SNP部位からゲノムDNAの3'側方向に向かって相補的にハイブリダイズするように設計されている（図4b）。但し、SNP部位に対応する配列（図4b中、「N」）は任意の塩基でよい。従って、鋳型であるゲノムDNAと上記2つのプローブをハイブリダイゼーションさせると、SNP部位にインベータープローブの1塩基（N）が割り込むように侵入し（図4c）、SNP部位が3重鎖を形成する。

#### 【0055】

一方、蛍光標識オリゴはアレルと全く無関係な配列であり、SNPの種類によらず配列は共通である。このプローブをフレット（FRET）プローブ（fluorescence resonance energy transfer probe）という（図5）。FRETプローブの5'末端の塩基（レポーター）には蛍光色素Rが標識されており、その上流にはクエンチャーQが結合している。従って、この状態ではクエンチャーが蛍光色素を吸収してしまうため蛍光を検出できない。また、FRETプローブの5'末端（レポーター塩基）から一定領域（領域1とする）は、その領域1よりも3'側の領域と向き合って相補的な配列となるように設計されている（これを領域2という）。従って、領域1は領域2と自分自身で相補鎖を形成する（図5）。また、この相補鎖形成領域よりもさらに3'方向の領域は、アレルプローブのフラップとハイブリダイズして相補鎖を形成できるように設計されている（図5）。

#### 【0056】

インベーター法では、DNAの特殊な構造を認識して切断する特殊なエンドヌクレアーゼ活性を有する酵素（5'ヌクレオチダーゼ）の1つであるクリーバーゼ（cleavase）を用いる。クリーバーゼは、ゲノムDNA、アレルプローブ及びインベータープローブがSNP位置で3重になった時に、アレルプローブのSNP位置の3'側を切断する酵素である。従って、図4cのように3つの塩基が並び、5'末端がフラップ状になっている部分を認識して、そのフラップ部分を切断する。これによって、このSNP部位の構造がクリーバーゼにより認識され（図6a）、フラップの部位でアレルプローブが切断されフラップ部分が遊離する（図6b）。次に、アレルプローブから遊離したフラップ部分は、FRETプローブと相補的な配列をもつため相補結合する（図6c）。このとき、フラップのSNP部位がFRET自身の相補結合部位に割り込んで侵入する。クリーバーゼは再びこの構造を認識して蛍光色素部分を切断する。切断された蛍光色素は、クエンチャーの影響を受けなくなり、蛍光を発する（図6d）。SNP部位がアレルプローブのSNPに対応する配列とマッチしない場合は、図7のように、クリーバーゼが認識する特異的なDNA構造をとらないため、プローブは切断されず、蛍光は検出されない。

#### 【0057】

例えば、あるSNPがT/Cのときに、T用のインベータープローブ、アレルプローブ、及びSNPに対応するレポーターにFAMを結合させたフレットプローブ、並びにこれとは別にC用のインベータープローブ、アレルプローブ、及びSNPに対応するレポーターにVICを結合させたフレットプローブとを準備し、全て混合してSNP検出を行う。その結果、SNPがT/Tのホモの場合にはFAMの蛍光を発し、C/Cのホモの場合にはVICの蛍光を発し、T/Cヘテロの場合にはFAMとVIC両者の蛍光を発する。FAMとVICは蛍光波長が異なるため、両者を分別できることになる。

#### 【0058】

##### (4) SniPer法による検出

SniPer法でSNPを検出するためには、アレルの識別をRCAによる増幅の有無で行うことができる。すなわち、鋳型になるべきゲノムDNAを直鎖状にしておいて、このゲノムDNAにプローブをハイブリダイズさせる。プローブの配列と鋳型であるゲノムDNAの配列とが相補的にマッチして相補鎖を形成すると、ゲノムDNAはラ

ライゲーション反応が起こって環状になることができる。その結果、環状DNAのRCAが進行する。これに対し、プローブの端がゲノムDNAとマッチしなければ、ライゲーションされず環状にならないため、RCAの反応は進まない。従ってSniPer法では、ゲノムDNAとアニールし、しかも環状になり得る一本鎖プローブを設計する。この一本鎖プローブをパドロックプローブという。このパドロックプローブの断端を検出目的となるSNPに対応する配列にしておいて、このパドロックプローブとゲノムDNAとを混ぜ、ライゲーション反応を行う。パドロックプローブの断端とゲノムDNAのSNP部分が相補的であれば、ライゲーション反応によってパドロックプローブは断端がつながり環状となるが、相補的でなければ環状にならない。従って、対象となるSNPに相当するパドロックプローブのみが環状となり、DNAポリメラーゼによって増幅する。SNPは、この増幅の有無を検出すればよい。検出は、両端に蛍光色素とクエンチャーをもち、ヘアピン構造を有する合成オリゴヌクレオチドを使用する。

#### 【0059】

##### (5) MALDI-TOF/MS法による検出

MALDI-TOF/MS (Matrix Assisted Laser Desorption-Time of Flight / Mass Spectrometry) 法は、質量分析計をSNPタイピングに応用した方法である。この方法は、以下のステップから構成される。

#### 【0060】

##### (i) SNPを含むDNA断片のPCR増幅及び精製

SNP部位の塩基とPCRプライマーは重複しないように設計した後DNA断片を増幅し、増幅反応産物からエキソヌクレアーゼやアルカリホスファターゼ処理によりプライマー、dNTP等を除去して増幅断片を精製する。

#### 【0061】

##### (ii) プライマー伸長反応（サーマルサイクル）及び精製

PCR産物である標的領域の鋳型に対して10倍以上のプライマーを加え、サーマルサイクル反応させてプライマー伸長反応を行う。ここで使用するプライマーは、その3'末端がSNP部位の塩基に隣接するように設計する。プライマーの長さは、15～30塩基、好ましくは20～25塩基である。マルチプレックス反応を行う場合

には、鋳型と相補的でない配列を5'末端に付加する。また、サーマルサイクルは、85~105℃（好ましくは94℃）と35~40℃（好ましくは37℃）の2温度間で20~30サイクル（好ましくは25サイクル）行う。

得られた反応産物を、質量分析機に適した状態にするため精製キット等を用いて精製する。

#### 【0062】

##### (iii) 質量分析計によるDNAの質量分析

精製された伸長反応産物を質量分析機にアプライして、目的産物の質量を測定する。すなわち、精製産物をマトリックスと混合し、MALDIプレートに0.5~1.0  $\mu$ Lスポットする。プレートを乾燥後、試料にレーザー光を照射し、スペクトログラムを作成する。

#### 【0063】

##### (6) 塩基配列決定法による検出

本発明においては、1塩基の伸長反応を利用した多型の検出を行うことができる。つまり、異なる蛍光化合物で標識された4種類のジデオキシヌクレオチドを、検出の対象となる遺伝子が含まれる反応系に添加し、1塩基の伸長反応を行う。この場合、伸長する塩基を多型部位としておき、また、DNA合成の停止とDNA分子の3'末端の蛍光標識という2つの反応を操作する。4種類の反応液をシーケンシング用ゲルの同一レーンやキャピラリー上で電気泳動を行ない、DNAバンドを標識した蛍光色素の違いを蛍光検出器により検出して配列決定を行う、あるいは1塩基伸長したオリゴヌクレオチドを蛍光検出装置や質量分析装置などを用いてどの塩基が伸長したかを蛍光色素の種類の違いを利用して調べる方法である。蛍光標識ジデオキシヌクレオチドの代わりにプライマーを蛍光標識し、非標識ジデオキシヌクレオチドと共に用いることもできる。

#### 【0064】

##### 6. 薬物の評価

本発明においては、前記のようにして得られる一塩基多型等の検出結果から、当該薬物代謝酵素によって代謝される薬物の有効性及び安全性を評価することができる。

薬物の評価は、タイピングシステムにより行うことができる。すなわち、上記いずれかの検出手法に従って、毒性（副作用）発現群と非発現群のアレル頻度を比較する。両者を比較した際、アレル頻度に差が生じるものを毒性発現認識のためのマーカーとして選出する。統計学的検定は、通常 $\chi^2$ 検定によるが、例えばFisher検定などの他の統計処理を行うこともできる。なお、この結果を、薬物の活性本体（薬物未変化体又は代謝物でもよい）の血中濃度、組織濃度に反映させることも可能である。当該全ての遺伝子多型に関して、毒性との因果関係を調べ、相関のあった遺伝子多型部位のみを選出する。その全ての遺伝子多型解析用プローブ又はプライマーと各手法に応じた試薬を、反応プレート、カード又はガラス基盤等に予め用意し、そこに予測したいヒトのゲノムDNAを添加し、反応させることで、アレルパターンを調べることができる。毒性と相関する遺伝子多型を有する場合には、そのヒトの副作用発現予測が可能となる。薬物の有効性についても同様である。また、薬物の違いにより、副作用又は有効性と相関する遺伝子多型も異なるので、それぞれに関して、当該遺伝子多型を用いてタイピング操作を行えば、有効性や副作用の予測をすることが可能となる。

#### 【0065】

このことを利用して、その遺伝子多型頻度と有効／無効又は副作用の有／無を比較し、アレル頻度に差がある時に判定することが可能となる。

例えば、薬物Aの投与によってある毒性（副作用）を示した者のSNPを解析した結果、統計的に全体の90%がT/Tを持つ者（例えばFAMの蛍光強度を検出）であることが判明し、毒性（副作用）を示さなかった者のSNPを解析した結果、T/Tを持つ者は全体の10%にすぎず、C/Cを持つものが90%を占めたことが判明したとすると、SNP解析の結果、T/Tを持つ者は薬物Aの投与はできないと評価することができる。

#### 【0066】

### 7. 薬物のスクリーニング

本発明において前記の通り得られた遺伝子多型情報は、被験者から採取した当該薬物代謝酵素をコードする遺伝子の遺伝子多型情報と比較することにより、当該薬物代謝酵素によって代謝される薬物の有効性及び安全性を解析するための指



標として利用される。従って、本発明において得られた遺伝子多型情報は、どの薬物が治療に最も有効であるか、その使用すべき薬物を選択するための情報源となる。

#### 【0067】

手法としては「5. 薬物の評価」に記載の評価方法を利用すればよい。つまり、前項で副作用又は有効性と相関が認められた遺伝子多型は、その酵素の活性、転写、翻訳に影響を与えるものであるといえる。また、副作用又は有効性の発現機構と間接的であっても何らかの因果関係があるといえる。ある薬物の代謝は、製薬会社などにおいて前臨床又は臨床試験にて調査・確認される。よって、それらの酵素遺伝子中に存在する遺伝子多型の中に重篤な副作用と相関する多型がある場合にはこれを削除すること、あるいは条件付きで使用する事が可能となる。また、有効性についても同様である。この副作用と有効性の情報から薬物のスクリーニングが可能となる。

#### 【0068】

さらに、臨床試験（第I～III相試験）において副作用発現症例のボランティアと副作用非発現症例の遺伝子多型頻度解析を行うことで、前記した以外に副作用と有効性と相関する新たな遺伝子多型を検出することが可能となる。これを、上記と同様に調べることで薬物のスクリーニングが可能となる。

#### 【0069】

##### 【実施例】

以下、実施例により本発明をさらに具体的に説明する。但し、本発明はこれら実施例にその技術的範囲が限定されるものではない。

#### 【0070】

##### 〔実施例1〕 SNP情報の取得

##### (1) DNA抽出

血縁関係のない48人からEDTA存在下に採血を行った。DNAの抽出は、ゲノム解析ラボマニュアル（中村祐輔編 シュプリンガー・フェアラーク東京）の方法に従って以下の通り行った。

#### 【0071】

血液10mlを50mlのファルコンチューブに移し、室温で3000rpm、5分間遠心を行った。ピペットにて上清（血清）を採取した後、RBC溶解バッファー(10mM  $\text{NH}_4\text{HCO}_3$ , 144mM  $\text{NH}_4\text{Cl}$ )を30ml加えた。沈殿がほぐれるまで混和した後、室温で20分放置した。室温で3000rpm、5分間遠心を行った後、ピペットにて上清（血清）を捨て、白血球のペレットを得た。RBC溶解バッファーを30ml加え、同様の操作をさらに2回行った。白血球のペレットにProteinase Kバッファー(50mM Tris-HCl (pH7.4), 100mM NaCl, 1mM EDTA (pH8.0))を4ml、10% SDSを200  $\mu$ l、10mg/ml Proteinase Kを200  $\mu$ l加え、転倒混和した後、37℃で一晩静置した。フェノールを4ml加え、ローテーター (Rotator T-50, Taitec) にて4時間ゆっくりと転倒混和した。室温で3000rpm、10分間遠心を行い、上層を新しいチューブに回収した。4mlのフェノール-クロロホルム-イソアミルアルコール(容積比25:24:1)を加え、同様に2時間転倒混和した後、遠心した。上層を新しいチューブに回収し、4mlのクロロホルム-イソアミルアルコール(容積比24:1)を加え、同様に30分転倒混和した後、遠心した。上層を新しいチューブに回収し、8M 酢酸アンモニウム400  $\mu$ l、イソプロパノール4mlを加え、転倒混和した。糸状の白色析出物(DNA)を2ml容のチューブに回収し、70%エタノールを1ml加え、転倒混和した。新しい2ml容のチューブにDNAを回収し風乾した後、TE溶液(10mM Tris-HCl (pH7.4), 1mM EDTA (pH7.4))を500  $\mu$ l加え、溶解後、ゲノムDNAサンプルとした。

### 【 0 0 7 2 】

#### (2) PCR

ゲノムシーケンスは、GenBank DNAデータベースから得た。RepMask コンピュータプログラムを用い、リピート配列を除いた後、PCR産物が1kb前後になるようにPCRプライマーを設定した。ゲノムDNAは、同濃度に調製した血縁関係のない48人のDNAを使用した。それぞれ3人分のDNAを1本のチューブに同量混ぜ、このうち60ngをPCRに使用した。PCRは、Ex-Taq (2.5U; TaKaRa)を使用し、GeneAmp PCR System 9700 (PE Applied Biosystems)を用いて行った。94℃で2分間反応後、94℃で30秒の変性、60℃又は55℃で30秒のアニーリング、72℃で1分の伸長を行い、これを1サイクルとして35サイクル行った。

### 【 0 0 7 3 】

### (3) シーケンス

PCR産物は、ArrayIt(Telechem)を使用し精製を行った後、BigDye Terminator RR Mix(PE Applied Biosystems)を用い、シーケンス反応を行った。GeneAmp PCR System 9700(PE Applied Biosystems)を用い、96℃で2分間反応後、96℃で20秒の変性、50℃で30秒のアニーリング、60℃で4分の伸長を行い、これを1サイクルとして25サイクル行った。シーケンス反応後、ABI PRISM 3700 DNA Analyzerにてシーケンス解析を行った。

【 0 0 7 4 】

#### (4) SNPの検出

SNPの検出には、PolyPhredコンピュータープログラム(Nickerson et al., 1997, Nucleic Acids Res., 25, 2745-2751)を使用し、解析を行った。

### (5) 結果

表1に示すSNPの結果が得られた。また、解析を行った薬物代謝酵素名とその略号、データベース(GenBank)のACCESSION 番号、薬物代謝酵素の遺伝子の構造とSNPsの存在位置を図9~141に示した。図9~141において、エキソンは水平線で表示した遺伝子上に白抜きのボックス又は黒の線で示した。SNPsの存在位置は、遺伝子の上側に実線で示し、番号を付した。

【0 0 7 5】

〔实施例2〕

異なる2グループの被験者についてインベーター法によりタイピングを行った。結果を図142に示す。図142において、横軸(Alelle 1)はTに対応するFAMの蛍光の強さを、横軸(Alelle 2)はCに対応するVICの蛍光の強さを表す。斜線入りの丸はSNPのパターンがT/Tであり、黒丸(●)はC/C、白丸(○)はT/Cであることを示す。黒四角(■)はバックグラウンド値を意味し、×印は判定不能を示す。パネルA(上)のグラフに示された被検者グループはSNPのパターンがC/Cのものが多く、パネルB(下)のグラフに示された被検者グループはSNPのパターンがT/Tのものが多いことが分かる。

【 0 0 7 6 】

### 〔実施例3〕 SNPの検出

血縁関係のない5人から実施例1に記載した方法により採取したゲノムDNAを試料とし、3種類の薬物代謝酵素遺伝子(EPHX1, ABCB2, AANAT)中のSNPの検出を、インベーター法により行った。EPHX1についてはNo.3 (配列番号49) 及びNo.17 (配列番号63)、ABCB2についてはNo.4 (配列番号4) 及びNo.11 (配列番号11)、AANATについてはNo.3 (配列番号561) の各配列に基づいて設計されたインベータープローブ及びアレルプローブを用いた。各SNPの存在位置は、表1に示されている。

結果を表2に示す。

【0077】

【表2】

薬物代謝酵素遺伝子	EPHX1		ABCB2		AANAT
	No.3	No.17	No.4	No.11	No.3
	配列番号49	配列番号63	配列番号4	配列番号11	配列番号561
SNP	(T/G)	(A/G)	(G/T)	(G/A)	(T/A)
被験者Ⅰ	T/T	A/G	T/T	G/A	T/T
被験者Ⅱ	T/T	A/A	G/G	G/G	T/A
被験者Ⅲ	T/G	A/A	G/G	A/A	T/T
被験者Ⅳ	G/G	A/G	G/T	G/G	T/T
被験者Ⅴ	T/G	A/G	G/T	G/A	T/A

【0078】

表2の結果より、本発明の方法により各被験者の薬物代謝酵素遺伝子中のSNPの検出及びそのパターンの同定が可能であることが分かった。

【0079】

#### 【発明の効果】

本発明により、SNPの解析方法が提供される。本発明の方法により、目的の疾患に応じた薬物の選択をすることが可能となるため、本発明の方法は極めて有用である。

【0080】

#### 【配列表】

#### SEQUENCE LISTING

<110> RIKEN

Nakamura Yusuke

Sekine Akihiro

Iida Aritoshi

Saito Susumu

<120> A method of detecting gene polymorphism

<130> RJH13-090S

<140>

<141>

<150> JP2000-399443

<151> 2000-12-27

<150> JP2001-135256

<151> 2001-05-02

<160> 3360

<170> PatentIn Ver. 2.0

<210> 1

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1

agctaagagt caaagcaccc scTTTTTcca ccagcctcgc g

41

<210> 2

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2

ccaccagcct cgcgtgcctg ktccttcac ggacactcta g

41

<210> 3

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3

ttgcaagcgc tggctgctac mggcgacctc cctgcgctcc c

41

<210> 4

<211> 41

<212> DNA

<213> Homo sapiens

<400> 4

gctttgcgcg cggcgctaac ktgtgtaggg cagatctgcc c

41

<210> 5

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 5

aaggaaactg aggccaagac yctaaatgct gaaactgcac a

41

&lt;210&gt; 6

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

ccctcaccat ggtcaccctg rtcaccctgc ctctgctttt c

41

&lt;210&gt; 7

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 7

gtatttcttt agcatccaag kggcatagct gtgtctcttt c

41

&lt;210&gt; 8

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 8

atttcttttag catccaaggg scatagctgt gtctctttct c

41

&lt;210&gt; 9

<211> 41

<212> DNA

<213> Homo sapiens

<400> 9

ttccttcagg ttaatgactg yggttctttg tgtcccctcc a

41

<210> 10

<211> 41

<212> DNA

<213> Homo sapiens

<400> 10

gtctctgccc ttgtctttgc ygcttcttct atctctactc c

41

<210> 11

<211> 41

<212> DNA

<213> Homo sapiens

<400> 11

agcgcacttt tcagctgcgg rtgtctcctc ttttatcatc c

41

<210> 12

<211> 41

<212> DNA

<213> Homo sapiens

<400> 12



aactgcatca ccttttcctt yaagcttttt aattcctatg a

41

&lt;210&gt; 13

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 13

cattcagga ggcccaggtc rtgtgacgtc gacagttgct g

41

&lt;210&gt; 14

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 14

aacaccctta ttttatagat ycaatgactg agtcaagaat t

41

&lt;210&gt; 15

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 15

cagcatctct acttatacca ygctctgctt taaggttctc t

41

&lt;210&gt; 16

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 16

actcaaatag gtggtaggag yagagacaat tcaatacaga c 41

<210> 17

<211> 41

<212> DNA

<213> Homo sapiens

<400> 17

gagcagagac aattcaatac rgacagaagt cttagatgag a 41

<210> 18

<211> 41

<212> DNA

<213> Homo sapiens

<400> 18

tagttttgcc atgtagaatt saaaaagtga tagatggtgt t 41

<210> 19

<211> 41

<212> DNA

<213> Homo sapiens

<400> 19

gttaagcctg cttcaatcaa rttagttata ttcttgttct a 41

<210> 20

<211> 41

<212> DNA

<213> Homo sapiens

<400> 20

ttgacttagc gacactgtta rcatacttat ctttcctgtg t 41

<210> 21

<211> 41

<212> DNA

<213> Homo sapiens

<400> 21

ccttgctgca cctgtgctgt mtaagtttgg cttattatag t 41

<210> 22

<211> 41

<212> DNA

<213> Homo sapiens

<400> 22

agtagagaca ggctggcgat sacaccggac agagctaact g 41

<210> 23

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 23

aacagaatca tgaaattaag ytgттаатга тттгаaggcc t

41

&lt;210&gt; 24

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 24

aggataaatt gtttatgtcg yctgggtacc atcatggcca t

41

&lt;210&gt; 25

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 25

ctggttgact ccagatatca yagaaggagt tgtaaaattc t

41

&lt;210&gt; 26

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 26

aatacacagg aagctttctaa rtaaagtaag gaagtcactc t

41

&lt;210&gt; 27

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 27

ctaaagagtg aatggattca rtacgtccct tggaactcac c

41

<210> 28

<211> 41

<212> DNA

<213> Homo sapiens

<400> 28

ctgaggttcc agcttatctc wtagagatgt ttacttagtc t

41

<210> 29

<211> 41

<212> DNA

<213> Homo sapiens

<400> 29

tgttagaaga aaaaaagggtt yatattacaa gagggctga c

41

<210> 30

<211> 41

<212> DNA

<213> Homo sapiens

<400> 30

cccaagatat cttcataact stccatagtg cctagggtgc c

41

<210> 31

<211> 41

<212> DNA

<213> Homo sapiens

<400> 31

tttaccacaga ttcacctatt rttatcattt ttgctcccaa a 41

<210> 32

<211> 41

<212> DNA

<213> Homo sapiens

<400> 32

tgtcctatac agtttttggt wtaagtttag taaattgatt a 41

<210> 33

<211> 41

<212> DNA

<213> Homo sapiens

<400> 33

tccagcttgg gtgacagagt ragacttcat ctcaaaaaa a 41

<210> 34

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 34

tactcttggg gagcctatca scagggtggg tcagatatag c

41

&lt;210&gt; 35

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 35

tgtttctttt ctgtccagat wctctcgga tttagtgaca a

41

&lt;210&gt; 36

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 36

cagaccacac taaccctcag ytggacctca ggatgtcagt g

41

&lt;210&gt; 37

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 37

tgtggataag aaaatagcat rtggtttagac catttgtgaa a

41

&lt;210&gt; 38

<211> 41

<212> DNA

<213> Homo sapiens

<400> 38

cagtcggttt ggaagcttgc yaccctttct tcacttcctc a

41

<210> 39

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 39

tttatcttca cttatgtttt nctcagttaa gttatgctaa t

41

<210> 40

<211> 40

<212> DNA

<213> Homo sapiens

<400> 40

tttatcttca cttatgtttt ctcagttaag ttatgcta

40

<210> 41



<211> 41

<212> DNA

<213> Homo sapiens

<400> 41

cttgcaaatg ttgctcttcc rcaaaaaaaaaa aaggaaagga t

41

<210> 42

<211> 41

<212> DNA

<213> Homo sapiens

<400> 42

agtatctcct aaactcttgc yatgcaggaa aaattatttt a

41

<210> 43

<211> 41

<212> DNA

<213> Homo sapiens

<400> 43

gaaatatttt actgtattaa ygtctagaac ttaaataaa g

41

<210> 44

<211> 41

<212> DNA

<213> Homo sapiens

<400> 44

ctgagtcttc ctatacatct wttccattcc tcggatgctg t

41

&lt;210&gt; 45

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 45

cttctcttac ctggaattct mggctctcga actttgactt t

41

&lt;210&gt; 46

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 46

agaaaatgaa attgccctac ygagctaact ctgaaagcac a

41

&lt;210&gt; 47

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 47

tgcaaaatgt gtcttactag yttctagtgc ataaaatatt g

41

&lt;210&gt; 48

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 48

aaatattggt ggagctcttc rctgtgctgg gccagtcacc a

41

<210> 49

<211> 41

<212> DNA

<213> Homo sapiens

<400> 49

aatccagaga gggagataga ktggaagttc aagggtggac a

41

<210> 50

<211> 41

<212> DNA

<213> Homo sapiens

<400> 50

ttccaagaca gagcgagggg ygctgctggg gcgtggtttg c

41

<210> 51

<211> 41

<212> DNA

<213> Homo sapiens

<400> 51

aactcgatgc tttctcctcc ktctgggtcc taactgcagt g

41

<210> 52

<211> 41

<212> DNA

<213> Homo sapiens

<400> 52

gaaatgtaac aggcaacact rtggacacag aaagtagatt a

41

<210> 53

<211> 41

<212> DNA

<213> Homo sapiens

<400> 53

atttcaaaa tctgtttggg kgtaactgaa acacttggga a

41

<210> 54

<211> 41

<212> DNA

<213> Homo sapiens

<400> 54

taccctcact tcaagactaa rattgaaggt atgtttgcaa a

41

<210> 55

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 55

ctgtcaatac catgaagggg sggcgggggc actaagggtg g

41

&lt;210&gt; 56

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 56

agaggttcca taactgcccc rtcctcgcca agggtgggcc c

41

&lt;210&gt; 57

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 57

aagggtgggc ccggtgttcc yaccaggctc tccttccggc g

41

&lt;210&gt; 58

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 58

gcagtgcctg aggcacgttg rcttggatcc tcctgtctgt a

41

&lt;210&gt; 59

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 59

tgctggacca agctctggga yagccctgag cagaactccc c

41

<210> 60

<211> 41

<212> DNA

<213> Homo sapiens

<400> 60

gatgtggagc tgctgtaccc ygtcaaggag aaggtattct a

41

<210> 61

<211> 41

<212> DNA

<213> Homo sapiens

<400> 61

ggtgcctggc tcccgggcgg mcctcagtac cgctccccag t

41

<210> 62

<211> 41

<212> DNA

<213> Homo sapiens

<400> 62

tggccctccc agaaaagaga rggccctcag tgaggggaga g

41

<210> 63

<211> 41

<212> DNA

<213> Homo sapiens

<400> 63

agggtgcagac tcatgcactc rgccctgaag aggtgagaga g

41

<210> 64

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 64

aaagtcactg gatatgcccc ntcccccgcc cccaacacg g

41

<210> 65

<211> 40

<212> DNA

<213> Homo sapiens

<400> 65

aaagtcactg gatatgcccc tcccccgccc cccaacacgg

40

<210> 66

<211> 41

<212> DNA

<213> Homo sapiens

<400> 66

aaagtcactg gatatgcccc yccccgccc cccaacacgg t

41

<210> 67

<211> 41

<212> DNA

<213> Homo sapiens

<400> 67

aagtcactgg atatgcccct yccccgccc ccaacacggt c

41

<210> 68

<211> 41

<212> DNA

<213> Homo sapiens

<400> 68

actggatatg cccctcccc scccccaac acggtcttat g

41

<210> 69

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 69

ctggatatgc ccctcccccg scccccaaca cggctttatg t

41

&lt;210&gt; 70

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 70

tggctgcttc tcaatgaata ygaacagtgt ctgtttccat g

41

&lt;210&gt; 71

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 71

gagcattagg tcagaatcca ytgaagtgag ctttgagatc a

41

&lt;210&gt; 72

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 72

gtgtgtctct actttaatct rcaaaaggtg attgaatgga g

41

&lt;210&gt; 73

<211> 41

<212> DNA

<213> Homo sapiens

<400> 73

caagagtggg atgttcaagg ycatcctgac ctcacttttg a

41

<210> 74

<211> 41

<212> DNA

<213> Homo sapiens

<400> 74

tctgtcctc ccggtgggtg ygctgtcttg cagctgtctt a

41

<210> 75

<211> 41

<212> DNA

<213> Homo sapiens

<400> 75

atgtcgtgaa gactgatgaa ygatggacgg ctgcactgct c

41

<210> 76

<211> 41

<212> DNA

<213> Homo sapiens

<400> 76

gaacaggatg gagatgagct ygtttatttg tcttttaatg a

41

&lt;210&gt; 77

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 77

tgaagagacc tcgacatgtc kcatcccaca tactacaggg a

41

&lt;210&gt; 78

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 78

atcttctcag ctgagcaaac ygaggctcag agggcttaac c

41

&lt;210&gt; 79

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 79

ttaaccccaa ctggcccaag rccaggtaca tgattgggtc a

41

&lt;210&gt; 80

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 80

aagtcctttc aagagattat yataagtagt accttctcat t 41

<210> 81

<211> 41

<212> DNA

<213> Homo sapiens

<400> 81

agattattat aagtagtacc ktctcattat aggaatattg a 41

<210> 82

<211> 41

<212> DNA

<213> Homo sapiens

<400> 82

cctgagtcgg actttcaaaa kcctcttcag agcaagcgat g 41

<210> 83

<211> 41

<212> DNA

<213> Homo sapiens

<400> 83

ttgtcgtaac agggttttca katgagcata tttcctttgt a 41

<210> 84

<211> 41

<212> DNA

<213> Homo sapiens

<400> 84

atgcataaag tctgtgaagc rggtaagaga catgcttggg a

41

<210> 85

<211> 41

<212> DNA

<213> Homo sapiens

<400> 85

ggattgagag cttacctcta ygggggtcac ctcgtgtatg c

41

<210> 86

<211> 41

<212> DNA

<213> Homo sapiens

<400> 86

attcccttat tccttcacac ygtctgtcac tcattcattc a

41

<210> 87

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 87

gcacaggctg ggtatgaagc yggggctgca tgctcagcta c

41

&lt;210&gt; 88

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 88

agagggtttt cactactttt yagtcatggc tcctcagaga a

41

&lt;210&gt; 89

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 89

tcctcatttg tcaagcagaa satgagtttc caatctctgg g

41

&lt;210&gt; 90

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 90

gtaagtgaac aactgctac rtgccagact tcctgccaga c

41

&lt;210&gt; 91

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 91

gtcattatca tcatatgacc ratgaaaatg accaaactgc a

41

<210> 92

<211> 41

<212> DNA

<213> Homo sapiens

<400> 92

aggtggcctt acacacatct ygcattggatg gcagcattgt t

41

<210> 93

<211> 41

<212> DNA

<213> Homo sapiens

<400> 93

tggtcacgga gaatgcacgg yatggggatg aaccctttcc c

41

<210> 94

<211> 41

<212> DNA

<213> Homo sapiens

<400> 94

tagccacctg cttttctccc rgcttcccta gcagagtttg c

41

<210> 95

<211> 41

<212> DNA

<213> Homo sapiens

<400> 95

ctcggaaagc tgagctcagg ragacagctg tccccggggt g 41

<210> 96

<211> 41

<212> DNA

<213> Homo sapiens

<400> 96

cactgacctc cttgccctga ragaaggccg gtcctgtgc t 41

<210> 97

<211> 41

<212> DNA

<213> Homo sapiens

<400> 97

ataattttcc tgacgagctc wagtgctccc tctggtctac a 41

<210> 98

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 98

ccccactaat gtgagtcata yagatggagt ctcagggcac g

41

&lt;210&gt; 99

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 99

ggataaaaac gaatattggt rtagcgattc cacagtttac a

41

&lt;210&gt; 100

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 100

agataggccc atgtgtgtgc rtgtagtaa attgtgtat g

41

&lt;210&gt; 101

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 101

gctgtagcca tccaagccta yagaacttgg ctgtgagtgt g

41

&lt;210&gt; 102

<211> 41

<212> DNA

<213> Homo sapiens

<400> 102

atcatctgac tggtaagttc yagttctgtg gtaactcaag t

41

<210> 103

<211> 41

<212> DNA

<213> Homo sapiens

<400> 103

atttcatgga gggaagtcca yggtagaagc aggctgctag g

41

<210> 104

<211> 41

<212> DNA

<213> Homo sapiens

<400> 104

ggctcagtgg ttggggccca rtggttcac taggacggga c

41

<210> 105

<211> 41

<212> DNA

<213> Homo sapiens

<400> 105

aagaggtgaa tggctgcggg rggctggaga agagagatgg g

41

<210> 106

<211> 41

<212> DNA

<213> Homo sapiens

<400> 106

agctcagcag acctcctggc ygtggtgggt agctcctttc c

41

<210> 107

<211> 41

<212> DNA

<213> Homo sapiens

<400> 107

actgtccaga cgggagtatc ycactgcttg gtgagcccca c

41

<210> 108

<211> 41

<212> DNA

<213> Homo sapiens

<400> 108

accgtcccca gctggcccca rcctcctgac atgggcctct g

41

<210> 109

<211> 41

<212> DNA

<213> Homo sapiens

<400> 109

ctggagccag gctgcagccg magtgcctgg ccacccctggc g

41

<210> 110

<211> 41

<212> DNA

<213> Homo sapiens

<400> 110

gtccaggcac tgtggcccta ygtgggagtc tccagctctcc a

41

<210> 111

<211> 41

<212> DNA

<213> Homo sapiens

<400> 111

ggcagtggtc caaggaccag satggactcc ctcttctcac c

41

<210> 112

<211> 41

<212> DNA

<213> Homo sapiens

<400> 112

atctgtaccc tcgcggactc yacctggctt cgtgccatca c

41

<210> 113

<211> 41

<212> DNA

<213> Homo sapiens

<400> 113

cgcgactct acctggcttc rtgccatcac ccccgccaga t

41

<210> 114

<211> 41

<212> DNA

<213> Homo sapiens

<400> 114

tcaggtgtcc cctccctcat rctctctcac cctgccctct c

41

<210> 115

<211> 41

<212> DNA

<213> Homo sapiens

<400> 115

tgtaaggaat cctgccaaga yggcagatgc acacggggtc a

41

<210> 116

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 116

ctcctgcaca tgtgctccag rgaggaaagg catttgacag g

41

&lt;210&gt; 117

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 117

ggcatgtgtg tgtgtgtgta kgtgtgtgag tgtgtgcatg t

41

&lt;210&gt; 118

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 118

tttctggacc agaaagcgtc rtcctctgcc agggcctctt g

41

&lt;210&gt; 119

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 119

gccagggcct cttgcacttg ygggaaagct gagctgagct g

41

&lt;210&gt; 120

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 120

ctgagctggg cagcagcatt rctctgtgtg ctgctggcac t

41

<210> 121

<211> 41

<212> DNA

<213> Homo sapiens

<400> 121

agcagcatta ctctgtgtgc ygctggcact ggcttggtgg g

41

<210> 122

<211> 41

<212> DNA

<213> Homo sapiens

<400> 122

gacaaagtgt acaacaaggt rtctcgaact gggtcagctc a

41

<210> 123

<211> 41

<212> DNA

<213> Homo sapiens

<400> 123

ccattcctgg gtcttctttg raggtgaat gaaattccat g

41

<210> 124

<211> 41

<212> DNA

<213> Homo sapiens

<400> 124

tctgccccac tttgctcaga sgtgcaacaa ggccttcagg a

41

<210> 125

<211> 41

<212> DNA

<213> Homo sapiens

<400> 125

ggacactggc ctgatgcaga sgtgtggtct ctctcctgca g

41

<210> 126

<211> 41

<212> DNA

<213> Homo sapiens

<400> 126

ggccagggca cccctaccag sctgagtcac acctgtccag c

41

<210> 127

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 127

taccgcctt cccagatgga rcgggctgct catgggactt a

41

&lt;210&gt; 128

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 128

tctggtcccc tctcctgctt rtagtttctt gggctaaaat c

41

&lt;210&gt; 129

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 129

tgggaccagt gccgccacca yggcccaagg acctggtggt c

41

&lt;210&gt; 130

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 130

gggctccagg cacacagcgg ycccagtaca cctgtcgctt t

41

&lt;210&gt; 131

<211> 41

<212> DNA

<213> Homo sapiens

<400> 131

tccgtggaac tcagagatgg yacctccctg cgagggtgggg c

41

<210> 132

<211> 41

<212> DNA

<213> Homo sapiens

<400> 132

aactctcccc tgctgctgag rcagatcttg gaggcctcggc c

41

<210> 133

<211> 41

<212> DNA

<213> Homo sapiens

<400> 133

ccgccctgtg cttcatgccc yctatgcctc tcactgcctg g

41

<210> 134

<211> 41

<212> DNA

<213> Homo sapiens

<400> 134

gtcctgaggc ccctcccacc rgagcctggg gtgccctcac a

41

&lt;210&gt; 135

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 135

gctgtgactg tcttgagac ygggtcttgg cgggcctggt g

41

&lt;210&gt; 136

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 136

ccaggagcct ctgaggcagc rggggcttct caaccacaca c

41

&lt;210&gt; 137

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 137

attttgtcag catgtcacgt ycctttcata atgaagcaag g

41

&lt;210&gt; 138

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 138

acagcactgc gggagccacg rcactctgcag acgcatttga t 41

<210> 139

<211> 41

<212> DNA

<213> Homo sapiens

<400> 139

tggactctct ggcgtccatc yagccacttc agtgcgacgt g 41

<210> 140

<211> 41

<212> DNA

<213> Homo sapiens

<400> 140

ggctggctgg gccctgggat satcgtgaca ggcttttagtg g 41

<210> 141

<211> 41

<212> DNA

<213> Homo sapiens

<400> 141

acaggtggga gccgaggctc kggaggtggg ccgggctgag c 41

<210> 142

<211> 41

<212> DNA

<213> Homo sapiens

<400> 142

ccgcttcccc gtgctctggc ygtagcagaa agtgtccac t

41

<210> 143

<211> 41

<212> DNA

<213> Homo sapiens

<400> 143

agcctccac tgccttgtgg ytgaggggag ggggccgggt c

41

<210> 144

<211> 41

<212> DNA

<213> Homo sapiens

<400> 144

tctaacgctg tcttctttgt wctgaaaacc aaacaccttc t

41

<210> 145

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 145

tgccgggcag cggggaggga rggcgagtgg ttcccccaag t

41

&lt;210&gt; 146

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 146

gtgcaggcgc cctgcatccc ygcagccaag ttctgggcgg a

41

&lt;210&gt; 147

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 147

gacactgccc tgagccagga yggtagagtg ggacgccttc c

41

&lt;210&gt; 148

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 148

tgaggggttg ggactctaca raggagagtg gactcacggg g

41

&lt;210&gt; 149

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 149

gacacctctt cactgtcagc kctgagacac gcccctgccc t 41

<210> 150

<211> 41

<212> DNA

<213> Homo sapiens

<400> 150

caggccagtt ggaatcctac rtagagtgaag agcatctcag c 41

<210> 151

<211> 41

<212> DNA

<213> Homo sapiens

<400> 151

taagcagttta aactgatgc rtgatgaaaa ttccaacagc a 41

<210> 152

<211> 41

<212> DNA

<213> Homo sapiens

<400> 152

cctccaggtg gcaggaacac ygtgaggagc atgcaacgtg c 41

<210> 153

<211> 41

<212> DNA

<213> Homo sapiens

<400> 153

gtgggctggg acgccaggac rgtgaggggc ttcaaggtgt g

41

<210> 154

<211> 41

<212> DNA

<213> Homo sapiens

<400> 154

ctgggacgcc aggacggtga rgggcttcaa ggtgtgtttg t

41

<210> 155

<211> 41

<212> DNA

<213> Homo sapiens

<400> 155

ggaggagctg aaagagctgg rgctcgggat caggtggttc a

41

<210> 156

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 156

actttgaggc accaccgcac mtgtccgtgc gtgagggaga c

41

&lt;210&gt; 157

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 157

tcccagtggg ggctctgtcc ycgtctcagc cgagcactca g

41

&lt;210&gt; 158

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 158

ccgtctcagc cgagcactca kcggccaggg tggctggact c

41

&lt;210&gt; 159

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 159

ccacaggccg gatgccttga yacttctcag ctgcagggt g

41

&lt;210&gt; 160

<211> 41

<212> DNA

<213> Homo sapiens

<400> 160

tggagagacc acctcagaca scaaggacgg gcatgccatg g

41

<210> 161

<211> 41

<212> DNA

<213> Homo sapiens

<400> 161

acctcagaca gcaaggacgg kcatgccatg ggtcccggca g

41

<210> 162

<211> 41

<212> DNA

<213> Homo sapiens

<400> 162

atgtctcaaa tctccctccc ygggaaatct aggcacaggt c

41

<210> 163

<211> 41

<212> DNA

<213> Homo sapiens

<400> 163

caggcccagg agcaggtggg kcctcctcac aggagcaggg c

41

<210> 164

<211> 41

<212> DNA

<213> Homo sapiens

<400> 164

actctgagca tgctggctcc ytccttcttt ccagggcagc a

41

<210> 165

<211> 41

<212> DNA

<213> Homo sapiens

<400> 165

cctggttggtg cttcggaccc rgaggcagac agaggaggcc t

41

<210> 166

<211> 41

<212> DNA

<213> Homo sapiens

<400> 166

acaatgactg ttggagccct ygagcaggct gtgtcacgtg g

41

<210> 167

<211> 41

<212> DNA

<213> Homo sapiens

<400> 167

actgggggat cctgaatccc rcctcctgat gccagtggag c

41

<210> 168

<211> 41

<212> DNA

<213> Homo sapiens

<400> 168

cacagtgtga actgttaggc sacagccaca tcttgccgga g

41

<210> 169

<211> 41

<212> DNA

<213> Homo sapiens

<400> 169

gagatggggg cggttcggga rgcaaaagca ggaaggcaga a

41

<210> 170

<211> 41

<212> DNA

<213> Homo sapiens

<400> 170

gcatgtgcat gggcagaggc ygttcccatc tgagtgggac c

41

<210> 171

<211> 41

<212> DNA

<213> Homo sapiens

<400> 171

ggccgcgtgc tcctgcagcc wtgggctcct ctggcagttc t

41

<210> 172

<211> 41

<212> DNA

<213> Homo sapiens

<400> 172

cccagggaca gatcttctcc rccagacgtc tctttctgcc t

41

<210> 173

<211> 41

<212> DNA

<213> Homo sapiens

<400> 173

gcagataatg tgcagctggg rtgcatgtgg ttgttgctcc c

41

<210> 174

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 174

tggcctgcta ctctctaagc stcaccatcc tgctcctgaa c

41

&lt;210&gt; 175

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 175

ggaggaagtc agcttcttac mgatggtggc tcccagcttt c

41

&lt;210&gt; 176

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 176

ttttctcctc tcaccttttg ygttcagagg cagaggtgtg c

41

&lt;210&gt; 177

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 177

gttgggccag gctctgacag raccctcggg accagctcct g

41

&lt;210&gt; 178

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 178

ggagccctgg ctgaagaagc sttacgacca aggcctggag g

41

<210> 179

<211> 41

<212> DNA

<213> Homo sapiens

<400> 179

ggacaggccg ggggttgagc rgctgcatga aggagggagg g

41

<210> 180

<211> 41

<212> DNA

<213> Homo sapiens

<400> 180

tcaccagagt gatttcctcg mggcaggtgc ctggggtagc c

41

<210> 181

<211> 41

<212> DNA

<213> Homo sapiens

<400> 181

gaggcaggtg cctggggtag yactgggcg gggatcatga g

41

<210> 182

<211> 41

<212> DNA

<213> Homo sapiens

<400> 182

ggagagtaag ggggtgggggg rcacttagga cagggaagct g

41

<210> 183

<211> 41

<212> DNA

<213> Homo sapiens

<400> 183

ccaggtgggg ccgtgtgcct stggcctggg gtgtggccca g

41

<210> 184

<211> 41

<212> DNA

<213> Homo sapiens

<400> 184

cagggaagct gggccctgaa ygagctgggc ttttgggcca c

41

<210> 185

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 185

attattgtga gcatgggaag wgcacatttg gtcacacatg t

41

&lt;210&gt; 186

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 186

gcctggctag acgccacca rtgaccctga tgatggcagc a

41

&lt;210&gt; 187

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 187

tttgggtccag gaagggggac rgcagccagg agcgtctgga t

41

&lt;210&gt; 188

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 188

atggagatgt gctcccccg sgggtcagag gacctgcggt c

41

&lt;210&gt; 189

<211> 41

<212> DNA

<213> Homo sapiens

<400> 189

ctctggggga cgcataagcc rcctccagag gacatcagcc a

41

<210> 190

<211> 41

<212> DNA

<213> Homo sapiens

<400> 190

gggcttccag gtgtctgagc yccccggcat gtaggacccc a

41

<210> 191

<211> 41

<212> DNA

<213> Homo sapiens

<400> 191

ggctttgggg gaccctggac ycatttctag aaaacagcct t

41

<210> 192

<211> 41

<212> DNA

<213> Homo sapiens

<400> 192

ccagggctcc caggtcagag yggccatggt agcttacaat g

41

&lt;210&gt; 193

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 193

tacttaggag gcgtcagggg ytcacctggc catggccatg g

41

&lt;210&gt; 194

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 194

gatgacactg tcattcctaa rtgaatggcc ttgtgctgac c

41

&lt;210&gt; 195

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 195

ccaacgccgg cattagtcgc kcctgcgcac ggccctgtgg a

41

&lt;210&gt; 196

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 196

cgttgcactg taggactctc yccacgtccc ctaatcccat c

41

<210> 197

<211> 41

<212> DNA

<213> Homo sapiens

<400> 197

gcagttcccg cggatagaga rggtcggtc cttcccgtg t

41

<210> 198

<211> 41

<212> DNA

<213> Homo sapiens

<400> 198

tgtgggtgaa ctgtaaaaaa ytgctgtat tcaggaggat a

41

<210> 199

<211> 41

<212> DNA

<213> Homo sapiens

<400> 199

cttcaactaa tctggaaca ytacactctg tttaattttc a

41

<210> 200

<211> 41

<212> DNA

<213> Homo sapiens

<400> 200

tgggaaagct gaaaagggat kctgagacct gtggttgggg g

41

<210> 201

<211> 41

<212> DNA

<213> Homo sapiens

<400> 201

ccgacggtca accctaccac yggggagggtc attgggcacg t

41

<210> 202

<211> 41

<212> DNA

<213> Homo sapiens

<400> 202

cgtgaaagca gcccgggaag ycttccgcct ggggtcccca t

41

<210> 203

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 203

gcggggccgg ctgctgaacc kcctggcaga cctagtggag c

41

&lt;210&gt; 204

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 204

acttgccccg gcactcgcca yaggcaacac tgtggttatg a

41

&lt;210&gt; 205

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 205

aaagtgaac tgtaagaccc rtagagaaaa actctggttc c

41

&lt;210&gt; 206

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 206

tgccgaaatg cggcagatga ygactgggga cctgaaccct c

41

&lt;210&gt; 207

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 207

acttaccact ctgtcctctc ytgccaggcc tcttcctgtc a

41

<210> 208

<211> 41

<212> DNA

<213> Homo sapiens

<400> 208

ccgcacatct gtaccctgcc sccatcctcc agcagagcag c

41

<210> 209

<211> 41

<212> DNA

<213> Homo sapiens

<400> 209

tcagtcatgg gttctctggg yccaacttca ccgctgactg a

41

<210> 210

<211> 41

<212> DNA

<213> Homo sapiens

<400> 210

aggaggccgg gagtcaggcc rccctcagac cctctggctc a

41

<210> 211

<211> 41

<212> DNA

<213> Homo sapiens

<400> 211

gggagtcctt gggggaagcc kcatgtaggg aagcaggcct c 41

<210> 212

<211> 41

<212> DNA

<213> Homo sapiens

<400> 212

ggataaggac atcagaggtg rgcgctaagc cagcagcagg c 41

<210> 213

<211> 41

<212> DNA

<213> Homo sapiens

<400> 213

atctcttacc cacaccccca scatggtggg gaggttcctc a 41

<210> 214

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 214

ccatggtggg gaggttcctc rtcctaaggg atccgcagag c

41

&lt;210&gt; 215

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 215

tccctgcctc cctccttcag rgagctcaga aacaccttca a

41

&lt;210&gt; 216

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 216

ggaaaccctc cagaaccagg ytccaagcca aatgctttgc c

41

&lt;210&gt; 217

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 217

cagaatacaa aagtgggatg sgaggcaagg agtcccgtta g

41

&lt;210&gt; 218

<211> 41

<212> DNA

<213> Homo sapiens

<400> 218

ctcgagggtgg agcttagccc ygtgccagga gcaatgggac t

41

<210> 219

<211> 41

<212> DNA

<213> Homo sapiens

<400> 219

ggagtcagtc ttcacttgca mtgggggaac agatgctaata

41

<210> 220

<211> 41

<212> DNA

<213> Homo sapiens

<400> 220

ttatccagta aggtggctcc rtcacctctt ttcctggtgg g

41

<210> 221

<211> 41

<212> DNA

<213> Homo sapiens

<400> 221

gacggccagg tccggatggt kgtgggagct gctgggggca c

41

&lt;210&gt; 222

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 222

aggaggttgt aggggcttgg mctgaatttt gtccttgac t

41

&lt;210&gt; 223

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 223

gggaaggagg aaaggaaaga rggggagggt ggttctgctt a

41

&lt;210&gt; 224

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 224

taacaccgga cgcccagcag magtcccagc ttcttagaat c

41

&lt;210&gt; 225

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 225

agcaggcccc agccctgccc rctactcacc tgggccccac c

41

<210> 226

<211> 41

<212> DNA

<213> Homo sapiens

<400> 226

tttctgttgc accacggacc stcattctgt aaccgggata c

41

<210> 227

<211> 41

<212> DNA

<213> Homo sapiens

<400> 227

gtaaccggga taccagccag rgatggggag cgggaggcgc a

41

<210> 228

<211> 41

<212> DNA

<213> Homo sapiens

<400> 228

tcctgcggct cctactgggg mgtgcgctgg tcggaaggta a

41

<210> 229

<211> 41

<212> DNA

<213> Homo sapiens

<400> 229

tcactcaaat agagctgagt yagtcactca gctcttggac c

41

<210> 230

<211> 41

<212> DNA

<213> Homo sapiens

<400> 230

acaaactcac atgccaccag scatatgatg taaacatgta a

41

<210> 231

<211> 41

<212> DNA

<213> Homo sapiens

<400> 231

aaagcagagg gctgtgcagg ygcccctgcc cctaggctag g

41

<210> 232

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 232

caaaggcctc atcctcaggg mggccaactc ttctgtttta g

41

&lt;210&gt; 233

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 233

actgcccagc ttaggttca ycttgtaag tgttgctggt g

41

&lt;210&gt; 234

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 234

ctgcccagct ttaggttcat ycttgtaagt gttgctggtg t

41

&lt;210&gt; 235

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 235

gcccagcttt aggttcattc ytgtaagtgt tgctggtgtc a

41

&lt;210&gt; 236

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 236

ccctgcgctt tgaagggatg ratgtgacct ctcccacatt c

41

<210> 237

<211> 41

<212> DNA

<213> Homo sapiens

<400> 237

tggtgtggcg gttcactgat yccccagcct tctgctcgat c

41

<210> 238

<211> 41

<212> DNA

<213> Homo sapiens

<400> 238

atggcaggta atgattcact rttgtggagt aagacttttt t

41

<210> 239

<211> 41

<212> DNA

<213> Homo sapiens

<400> 239

gccacgtgga agtgtataaa ytatctggaa ttatcttggt t

41

<210> 240

<211> 41

<212> DNA

<213> Homo sapiens

<400> 240

caccctgttt agcacctagc mcatccctg gcctctgccc a

41

<210> 241

<211> 41

<212> DNA

<213> Homo sapiens

<400> 241

agtagcacc ctccccacc rgctgtgaca aacaaaaatg t

41

<210> 242

<211> 41

<212> DNA

<213> Homo sapiens

<400> 242

ctgatttgta tgccatgaac yttgagccga gggccacaga c

41

<210> 243

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 243

aatgctctat ttataaaaac yatctttatg ttttttactt t

41

&lt;210&gt; 244

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 244

aacgtgggca taaaccacca yctagtgcca aaaagcaggt g

41

&lt;210&gt; 245

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 245

tgcctctgca cacccttcc ygacaccagc cctttcttta c

41

&lt;210&gt; 246

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 246

tcggccggcc acgtggagcc ygctttcctc ctcgcacca c

41

&lt;210&gt; 247

<211> 41

<212> DNA

<213> Homo sapiens

<400> 247

tggtgttacg cacagctcct ygtccctcc ctgcctgccc a

41

<210> 248

<211> 41

<212> DNA

<213> Homo sapiens

<400> 248

ctgtactggt tcagcgtgcc rgccatcctg aagggtgga t

41

<210> 249

<211> 41

<212> DNA

<213> Homo sapiens

<400> 249

atcccaggat tctacgattc yggtttgctc caggtatgtg c

41

<210> 250

<211> 41

<212> DNA

<213> Homo sapiens

<400> 250

gtatgtgctc ttggataagg wtcactatgg atagttggag g

41

&lt;210&gt; 251

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 251

atggcaaaca agggagtggg ycaggtgtca ggtgacgggg g

41

&lt;210&gt; 252

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 252

cccccccttaa atcatttaac ygaatggtat gtaacaggtg t

41

&lt;210&gt; 253

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 253

gcagagtaaa gggactcact saagaagagg aacgtggggg t

41

&lt;210&gt; 254

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 254

gaggggtata ttcatgaaga ktccaggaaa aggtaaagat t

41

<210> 255

<211> 41

<212> DNA

<213> Homo sapiens

<400> 255

cggtttcata tggtactgat yatacaatga gacccatagg t

41

<210> 256

<211> 41

<212> DNA

<213> Homo sapiens

<400> 256

ggtttcatat gttactgac rtacaatgag atccatagg t

41

<210> 257

<211> 41

<212> DNA

<213> Homo sapiens

<400> 257

catatgttac tgatcataca rtgagatcct aggtgaaacc t

41

<210> 258

<211> 41

<212> DNA

<213> Homo sapiens

<400> 258

aaccctgcat tccccacaca rcaccacaa tcagccactg c

41

<210> 259

<211> 41

<212> DNA

<213> Homo sapiens

<400> 259

gagccaccct gcctaggcct rtgcttttgc tgagtcatca g

41

<210> 260

<211> 41

<212> DNA

<213> Homo sapiens

<400> 260

gctgggggtc ccagcaggaa rtggtgagac aaagggcgct g

41

<210> 261

<211> 41

<212> DNA

<213> Homo sapiens

<400> 261

ctggctggca gggagacagc mcaggaaggt cctagagctt c

41

<210> 262

<211> 41

<212> DNA

<213> Homo sapiens

<400> 262

gagaccttca cacaccctga yatctgggcc ttgcccgcacg a

41

<210> 263

<211> 41

<212> DNA

<213> Homo sapiens

<400> 263

ctggttttca gccccagccc ygccactgac tggctttgtg a

41

<210> 264

<211> 41

<212> DNA

<213> Homo sapiens

<400> 264

agccccagcc ccgccactga stggctttgt gaggcgggc a

41

<210> 265

<211> 41

<212> DNA

<213> Homo sapiens

<400> 265

tgtgatggtg gtaagggaac rggcctggct ctggcccctg a

41

<210> 266

<211> 41

<212> DNA

<213> Homo sapiens

<400> 266

catgaaggag gtgagaccac stgtgaagct tccctccatg t

41

<210> 267

<211> 41

<212> DNA

<213> Homo sapiens

<400> 267

ggaggtgaga ccacctgtga wgcttcctc catgtgacac c

41

<210> 268

<211> 41

<212> DNA

<213> Homo sapiens

<400> 268

gaagcttccc tccatgtgac wcctgggggc cggcacctca c

41

<210> 269

<211> 41

<212> DNA

<213> Homo sapiens

<400> 269

ctcacaggga cccaccaggg ycaccagcc ccctcccttg g

41

<210> 270

<211> 41

<212> DNA

<213> Homo sapiens

<400> 270

ttggcagccc ccacagcagg mccggattcc ccctcctgcc t

41

<210> 271

<211> 41

<212> DNA

<213> Homo sapiens

<400> 271

gcagccccc cagcaggccc rgattcccca tcctgccttc t

41

<210> 272

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 272

ctccctgcc aagggtgtgc yaccagggc cacagtcag g

41

&lt;210&gt; 273

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 273

tttactttt cctgaatcag yaatccgagc ctccactgag g

41

&lt;210&gt; 274

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 274

aatccgagcc tccactgagg rgccctctgc tgctcagaac c

41

&lt;210&gt; 275

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 275

ccctctgctg ctcagaaccc saaaaggag attcaaaaga t

41

&lt;210&gt; 276

<211> 41

<212> DNA

<213> Homo sapiens

<400> 276

gagtttgtgg ggcactccct rccagaggag accgtggact t

41

<210> 277

<211> 41

<212> DNA

<213> Homo sapiens

<400> 277

gctgtgagag gggctcctgg rgtcactgca gagggagtgt g

41

<210> 278

<211> 41

<212> DNA

<213> Homo sapiens

<400> 278

tgttctttct tggttctatg satccatgct ctgctccacc c

41

<210> 279

<211> 41

<212> DNA

<213> Homo sapiens

<400> 279

tgtgggttgc actgggccag racccctggc accttcaaga c

41

<210> 280

<211> 41

<212> DNA

<213> Homo sapiens

<400> 280

ctttccaggg cctgcctatc ycagctttct ccttcttgcc t

41

<210> 281

<211> 41

<212> DNA

<213> Homo sapiens

<400> 281

tccagggcct gcctatccca kctttctcct tcttgccctgg g

41

<210> 282

<211> 41

<212> DNA

<213> Homo sapiens

<400> 282

actgcgggcg aggagggcac raggccaggt tccaagagc t

41

<210> 283

<211> 41

<212> DNA

<213> Homo sapiens

<400> 283

ctgactggcc ttgtgagtgc rggcaagtca ctcagcctcc c

41

<210> 284

<211> 41

<212> DNA

<213> Homo sapiens

<400> 284

gagctgatcc aggacatctc ycgcccgccca ctggagtacg t

41

<210> 285

<211> 41

<212> DNA

<213> Homo sapiens

<400> 285

gccaccacc ctctcccagg yggcagtcac caccttggcc a

41

<210> 286

<211> 41

<212> DNA

<213> Homo sapiens

<400> 286

cagcaaccct gtgtcggcac yccctgccccg cttctccagt g

41

<210> 287

<211> 41

<212> DNA

<213> Homo sapiens

<400> 287

actgggggtcc caggggtcga sgagctggct ctatgggttt t 41

<210> 288

<211> 41

<212> DNA

<213> Homo sapiens

<400> 288

gctctgagct gtgagagggg ytcctggagt cactgcagag g 41

<210> 289

<211> 41

<212> DNA

<213> Homo sapiens

<400> 289

cctccccgct ccagctcctc wacttgccct gtttgagag g 41

<210> 290

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 290

ccactgactc ggggcttgcc maggctgcca gggctggcaa a

41

&lt;210&gt; 291

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 291

cctctcccct ggaggctgct ytaccgctg tgggggcgca t

41

&lt;210&gt; 292

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 292

tcccgtagcc caggcaagtt yggtgaccag agagcagccc c

41

&lt;210&gt; 293

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 293

cctgcttctc cctttacctg kctggctgtg tgaccttgga c

41

&lt;210&gt; 294

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 294

taggaatggc taagcgtgtc rttggcttct gtggccactc a

41

<210> 295

<211> 41

<212> DNA

<213> Homo sapiens

<400> 295

cattctcact gatgcagacg raagcttctg ggcctgggcg t

41

<210> 296

<211> 41

<212> DNA

<213> Homo sapiens

<400> 296

cacccttggc ttttaccagc rtggaaacat ttacctgaa t

41

<210> 297

<211> 41

<212> DNA

<213> Homo sapiens

<400> 297

gcgtgggctt ctggagggag ygagaggaga gtggagggcc c

41

<210> 298

<211> 41

<212> DNA

<213> Homo sapiens

<400> 298

agcttgaaat gagccagact ytcctgggac ctgttgaccc c

41

<210> 299

<211> 41

<212> DNA

<213> Homo sapiens

<400> 299

agtactttgt tttatcctcc ycatcctcac aactttgcc a t

41

<210> 300

<211> 41

<212> DNA

<213> Homo sapiens

<400> 300

gccaggatcc cttgagagac racatgaaca cagccaggag c

41

<210> 301

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 301

tgcttcgggc tgggcttggc rggggcagct gtgctccagg c

41

&lt;210&gt; 302

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 302

caaactgggg cccttaatgc ygcacaccag agcctccttt c

41

&lt;210&gt; 303

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 303

ctctcacaca agggcgagc stcttcccct tgaggcagag c

41

&lt;210&gt; 304

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 304

agacagaggc tggggccaag ycagggttgc cggagcttcc t

41

&lt;210&gt; 305

<211> 41

<212> DNA

<213> Homo sapiens

<400> 305

gcccaagccag ggttgccgga kcttcctgga ctggtcaggc c

41

<210> 306

<211> 41

<212> DNA

<213> Homo sapiens

<400> 306

ttttcctctt agagcttccc rtcgtgctct gtgtcgaggg c

41

<210> 307

<211> 41

<212> DNA

<213> Homo sapiens

<400> 307

caggcgggga gcctgaatgc ygcagtcgtg aggggtggcca g

41

<210> 308

<211> 41

<212> DNA

<213> Homo sapiens

<400> 308

tcataaaata atgatatcag yacacttttt ggaaatttga g

41

&lt;210&gt; 309

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 309

ctctgtgccc ggtgttgaga maggccatgc cctagagtcc t

41

&lt;210&gt; 310

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 310

gccatgccct agagtcctgg rgagttccac cccagaacag c

41

&lt;210&gt; 311

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 311

gaaccatctg ggagtcgttc ygtactgccg tgccgagggc c

41

&lt;210&gt; 312

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 312

agccatagta gctagccagc ratcagcgct gggaggggag c 41

<210> 313

<211> 41

<212> DNA

<213> Homo sapiens

<400> 313

actccacttc ccctgaaccc yacccttcc ttcctcctct g 41

<210> 314

<211> 41

<212> DNA

<213> Homo sapiens

<400> 314

gcgtgccgaa ggcgggaggg ytggtatggc tcaagacgtg a 41

<210> 315

<211> 41

<212> DNA

<213> Homo sapiens

<400> 315

ccagctgact cccacaccag yggtcagaga acattgtctt t 41

<210> 316

<211> 41

<212> DNA

<213> Homo sapiens

<400> 316

acattgtctt ttaaggtttc ygaagtgctg caataaagaa a

41

<210> 317

<211> 41

<212> DNA

<213> Homo sapiens

<400> 317

tctgatctca gagagctgac ratggaaaga attctaaacg a

41

<210> 318

<211> 41

<212> DNA

<213> Homo sapiens

<400> 318

agaccgtgc ctgcagttta kccacagct cagccctccc t

41

<210> 319

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 319

ggaagggcca gggctgcctg ygatgccag agcagtgcac t

41

&lt;210&gt; 320

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 320

agatcact cgctcctggg rtgtttatta aacacctgcc a

41

&lt;210&gt; 321

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 321

gttcccgcg ttgcgtcgag sgtttctgct tgtggggta g

41

&lt;210&gt; 322

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 322

tccaaagcct gtcttcctga kttcctgtgg aaggagagtc c

41

&lt;210&gt; 323

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 323

acccgccacc atgccagct matTTTTTTT gtatTTTTTT t 41

<210> 324

<211> 41

<212> DNA

<213> Homo sapiens

<400> 324

agaaaagcag attaatgtaa sagtgacgct tagacaaca g 41

<210> 325

<211> 41

<212> DNA

<213> Homo sapiens

<400> 325

ggcagaaaga gaatatagca rctattaaac acaaataaat t 41

<210> 326

<211> 41

<212> DNA

<213> Homo sapiens

<400> 326

tattgctgtc cacctgggtca rtgtgtcctg ctgataagt c 41

<210> 327

<211> 41

<212> DNA

<213> Homo sapiens

<400> 327

aatacaatac ttattctgta yaattctaga gggcccagag a 41

<210> 328

<211> 41

<212> DNA

<213> Homo sapiens

<400> 328

tagaacaagt gaatatttta ygttcttagt ggtttatggt t 41

<210> 329

<211> 41

<212> DNA

<213> Homo sapiens

<400> 329

tacgttctta gtggtttatg kttggcagtt ttcccccaac a 41

<210> 330

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 330

tcaagacatt taataatgca yatgtttcag ctaacccttt t

41

&lt;210&gt; 331

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 331

ttatagtggg ttttaagcatg rtttctaaaa aatttaaata a

41

&lt;210&gt; 332

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 332

aaaacattag aactgggaag rttaaaaaat ctttagtctt t

41

&lt;210&gt; 333

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 333

tatgtgcacc ctaataacat rtttccttaa aactagtact a

41

&lt;210&gt; 334

<211> 41

<212> DNA

<213> Homo sapiens

<400> 334

ttggaaggta acttaatgta rgtgcctgaa aaacagggat a

41

<210> 335

<211> 41

<212> DNA

<213> Homo sapiens

<400> 335

gaatggggat ttccctcagt sctgcccact ggctgctctt g

41

<210> 336

<211> 41

<212> DNA

<213> Homo sapiens

<400> 336

acctgttgcc ttaaactcac rctgctttg ttttccagg t

41

<210> 337

<211> 41

<212> DNA

<213> Homo sapiens

<400> 337

tgctggggaa gaaagatcag sgtctgggac ttgttgattt t

41

<210> 338

<211> 41

<212> DNA

<213> Homo sapiens

<400> 338

agcagggcac gtcaccctcc yggcacaccc atgtgttcac c

41

<210> 339

<211> 41

<212> DNA

<213> Homo sapiens

<400> 339

ttgttatttt cattatgaac yatgaaatat ttcagctgaa a

41

<210> 340

<211> 41

<212> DNA

<213> Homo sapiens

<400> 340

gttgtctgta catgttctaa kgtttttag aacacgtgtg c

41

<210> 341

<211> 41

<212> DNA

<213> Homo sapiens

<400> 341

acggtgcttg gcctgcatta ycattttgta gtgaagtttc t 41

<210> 342

<211> 41

<212> DNA

<213> Homo sapiens

<400> 342

tcacctatca tctcactgc raggatgccca ggataacctcc c 41

<210> 343

<211> 41

<212> DNA

<213> Homo sapiens

<400> 343

cttaagccat cgtgcaggtc rttgctgtct tctgctcact t 41

<210> 344

<211> 41

<212> DNA

<213> Homo sapiens

<400> 344

cccaggctgg agtgtagtgg ygtgatctcg gctcactgca a 41

<210> 345

<211> 41

<212> DNA

<213> Homo sapiens

<400> 345

ggagtgtagt ggtgtgatct yggctcactg caacctccgc c

41

<210> 346

<211> 41

<212> DNA

<213> Homo sapiens

<400> 346

ctcggctcac tgcaacctcc rctctccggg ttcaagcagt t

41

<210> 347

<211> 41

<212> DNA

<213> Homo sapiens

<400> 347

aatgttcagt ctctcaattc ytggtcatct gatttgttcc t

41

<210> 348

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 348

taaataaata aactattggt ycctttcttg tcttataagg t

41

&lt;210&gt; 349

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 349

tactgcagcc tgatacttct yggcttaagc catcctctca c

41

&lt;210&gt; 350

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 350

caccccaggc tcctgagtag ytaggactgc aggtgcacgc c

41

&lt;210&gt; 351

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 351

cccaggctgg tctagaactc stggccgtaa gggatgcccc t

41

&lt;210&gt; 352

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 352

gttgatggcc ttatttatac rtttccatta cagcttctag t 41

<210> 353

<211> 41

<212> DNA

<213> Homo sapiens

<400> 353

caaatatttg aaaatgggac scaggcctga ggaagagctt t 41

<210> 354

<211> 41

<212> DNA

<213> Homo sapiens

<400> 354

taagctcagc atttctgagc rtgtgctgat ttaggaaat a 41

<210> 355

<211> 41

<212> DNA

<213> Homo sapiens

<400> 355

gcgtgtgctg attttaggaa rtaaacagtt atcgattga a 41

<210> 356

<211> 41

<212> DNA

<213> Homo sapiens

<400> 356

gattcaacgt acataccagc ygacattgac aggtgaatgg c

41

<210> 357

<211> 41

<212> DNA

<213> Homo sapiens

<400> 357

gtctccttaa aagtggtgctc kctgcccctg gcttgcccca g

41

<210> 358

<211> 41

<212> DNA

<213> Homo sapiens

<400> 358

aagaccagcc tgaccaaacc rgtgaaaccc cgtctctact a

41

<210> 359

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 359

tgggaggcag aggtcgcagt ragctgagat cacgccgttg c

41

&lt;210&gt; 360

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 360

ggacttcact ggggggttccc rctgcttctg ggtggccccc g

41

&lt;210&gt; 361

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 361

gtttgtctga cactggggac rgggcaggaa gcaccactat g

41

&lt;210&gt; 362

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 362

aaagggaattt ttttgaactt sgtaattcaa agatttaaga t

41

&lt;210&gt; 363

<211> 41

<212> DNA

<213> Homo sapiens

<400> 363

tcctgggtac agagttggcc ktgaacaaac atgagtcctt c

41

<210> 364

<211> 41

<212> DNA

<213> Homo sapiens

<400> 364

cttccccact ttcagatctc ygcaaatgac ttcattgcc a

41

<210> 365

<211> 41

<212> DNA

<213> Homo sapiens

<400> 365

cgcttcgatg cggactatgc rgagaagatg gcaggctgca g

41

<210> 366

<211> 41

<212> DNA

<213> Homo sapiens

<400> 366

agagctcccc agagaggact rtgaggctgc atgatgcatg a

41

&lt;210&gt; 367

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 367

gagtgagacc cccatctcta yaaaattttt tttaaaaagt a

41

&lt;210&gt; 368

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 368

atgcctaagt ttacagtagc yaggcaggaa aggcacaacc a

41

&lt;210&gt; 369

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 369

ccagagcctg aggttggtgc wggggcccct ccatggctgc c

41

&lt;210&gt; 370

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 370

ctatctctcc agtgcctctc ygtccctgtc tggaccctgc t

41

<210> 371

<211> 41

<212> DNA

<213> Homo sapiens

<400> 371

ctgtccctgt ctggaccctg mtgggggggcc acagagcagg c

41

<210> 372

<211> 41

<212> DNA

<213> Homo sapiens

<400> 372

tcactagttt cctgctgctg rtgtactcct atgccgtgcc c

41

<210> 373

<211> 41

<212> DNA

<213> Homo sapiens

<400> 373

tcgtctgagg tcaggagttc ragaccagcc tggccaacat g

41

<210> 374

<211> 41

<212> DNA

<213> Homo sapiens

<400> 374

ttttgtccta taaaatggca rtttcatgtg gcccaagctg a 41

<210> 375

<211> 41

<212> DNA

<213> Homo sapiens

<400> 375

gaggcagtga tccgggcca yggctcggcg ggggagtgcc a 41

<210> 376

<211> 41

<212> DNA

<213> Homo sapiens

<400> 376

gcaaattttt ggtattttta ktacagtcag ggttttacca t 41

<210> 377

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 377

gcagatctca ctttctggca rattccctga atttgctccc c

41

&lt;210&gt; 378

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 378

ttcatagggc ttttcctca yttgttttgt aattttgtat a

41

&lt;210&gt; 379

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 379

gaaaagagac tagaggcagg rgagctttgc agttcttcta a

41

&lt;210&gt; 380

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 380

tggctggcag gaaggtgagg sagtcctctc ttctctggtc c

41

&lt;210&gt; 381

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 381

acatgaaggc aggatccaga ytgaatgttt ggagggaact a

41

<210> 382

<211> 41

<212> DNA

<213> Homo sapiens

<400> 382

ggctcacgcc tgtaatccca scactttggg aggccgaggc g

41

<210> 383

<211> 41

<212> DNA

<213> Homo sapiens

<400> 383

cactttggga ggccgaggcg sgtggatcac aaagtcagga g

41

<210> 384

<211> 41

<212> DNA

<213> Homo sapiens

<400> 384

tcctgttaac tcacagagaa yggaagggt ggaacgggac c

41

<210> 385

<211> 41

<212> DNA

<213> Homo sapiens

<400> 385

acactaatgg ccttacacga satggaggat ttacatttg a

41

<210> 386

<211> 41

<212> DNA

<213> Homo sapiens

<400> 386

gtagacttgt ttatttattc mttcccaatc taggccctta t

41

<210> 387

<211> 41

<212> DNA

<213> Homo sapiens

<400> 387

gagtgtgtga gctagaaagg kgatcctgag tctgatttgg g

41

<210> 388

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 388

gggctactat cagcagccac yacctcagga aggatgactt c

41

&lt;210&gt; 389

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 389

aagacttgga agcaaataga kaaaaaaaaa atcgtagaaa t

41

&lt;210&gt; 390

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 390

caaaatctcc aaacacccta raaggaaaga atcttttctt t

41

&lt;210&gt; 391

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 391

ctgccttctt taatggaaca ytctcacttc tcttcaggaa t

41

&lt;210&gt; 392

<211> 41

<212> DNA

<213> Homo sapiens

<400> 392

ctttgtgttt actttgtttt yacttggtac aaaagtgttg t

41

<210> 393

<211> 41

<212> DNA

<213> Homo sapiens

<400> 393

tctgctccta gagatggagg mgtcccacag ccacagtgat g

41

<210> 394

<211> 41

<212> DNA

<213> Homo sapiens

<400> 394

agctactgaa cctctccac rtaactgtat ttcaggggca g

41

<210> 395

<211> 41

<212> DNA

<213> Homo sapiens

<400> 395

actgtccat aaaatcatta ycattctaaa taaagttaat a

41

<210> 396

<211> 41

<212> DNA

<213> Homo sapiens

<400> 396

aacatttaaa tagtcattta yagcaatgca caggtataat a

41

<210> 397

<211> 41

<212> DNA

<213> Homo sapiens

<400> 397

attacataat gctcaaaaat rtcttgaaaa actggttggc a

41

<210> 398

<211> 41

<212> DNA

<213> Homo sapiens

<400> 398

gtacttgaca ttaaaaaata yctgatgttt atatatccat a

41

<210> 399

<211> 41

<212> DNA

<213> Homo sapiens

<400> 399

ttaaaaaata tctgatgttt rtatatccat aaatagctaa t 41

<210> 400

<211> 41

<212> DNA

<213> Homo sapiens

<400> 400

tttaagattg tcctcatatt sttacttcct ttggttacta a 41

<210> 401

<211> 41

<212> DNA

<213> Homo sapiens

<400> 401

aatgtttatg aaaatagact yttatctggt tttagtggcc t 41

<210> 402

<211> 41

<212> DNA

<213> Homo sapiens

<400> 402

ctgcatcatg ctgtaaaagg rttgatattt gctttccaac t 41

<210> 403

<211> 41

<212> DNA

<213> Homo sapiens

<400> 403

taatagaatc caaaggagga matcaagaag atcattagat t

41

<210> 404

<211> 41

<212> DNA

<213> Homo sapiens

<400> 404

aatacattac ttccatttaa rtagtctgtt tattgtggct t

41

<210> 405

<211> 41

<212> DNA

<213> Homo sapiens

<400> 405

agatgtaaaa aattattcaa wttttaaaag cctgaaaaat t

41

<210> 406

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 406

tttaaagtgt ctaaatacaca matctgaaga aataagagat t

41

&lt;210&gt; 407

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 407

tcagatccca gttttgttcc kttgattctg agtttcctaaa t

41

&lt;210&gt; 408

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 408

tttgacccag gacactgtgt kccactgctg tctaccgagt t

41

&lt;210&gt; 409

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 409

gtagttcaga ttttggaaat mtttttttcta tatcatacct a

41

&lt;210&gt; 410

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 410

agccggacag tccgccgggc rgtgatccgg gggccgctcc c

41

<210> 411

<211> 41

<212> DNA

<213> Homo sapiens

<400> 411

gcgctgggga ccagccgccg ygcccgcctc ggagtcgcgg c

41

<210> 412

<211> 41

<212> DNA

<213> Homo sapiens

<400> 412

aggagtgaag cacatctttg watictaag gcagaaacca a

41

<210> 413

<211> 41

<212> DNA

<213> Homo sapiens

<400> 413

gcagagacca atgttttggg sctgaggctg gttcagaaaa a

41

<210> 414

<211> 41

<212> DNA

<213> Homo sapiens

<400> 414

tactgaaaca ttctgcagaa ygttatacta tgagaagaaa t

41

<210> 415

<211> 41

<212> DNA

<213> Homo sapiens

<400> 415

ggactgggct ctgtacacac ytcgtcttac tgtgtgtaaa t

41

<210> 416

<211> 41

<212> DNA

<213> Homo sapiens

<400> 416

caaaaccctc ttaatattct rtttctatct gtctcagaac t

41

<210> 417

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 417

tctgtctcag aactgattgc rtgactctag gatcgctata t

41

&lt;210&gt; 418

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 418

agctggaaat tacaggcaca ygccaccaca cccagctaata t

41

&lt;210&gt; 419

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 419

aggcatgagc cacggcgccc rgccaatttta tcagcttta t

41

&lt;210&gt; 420

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 420

ttccttggtta aaagttacca sggttggcca ggcacggtgg t

41

&lt;210&gt; 421

<211> 41

<212> DNA

<213> Homo sapiens

<400> 421

gttaccaggg ttggccaggc rcggtggttc atgcctgtaa t

41

<210> 422

<211> 41

<212> DNA

<213> Homo sapiens

<400> 422

ttagccaggc gcattggctc rtgtctgtaa tcccagcact t

41

<210> 423

<211> 41

<212> DNA

<213> Homo sapiens

<400> 423

ttctcccctc tcctcaccat ygcacacag gtgatctaca t

41

<210> 424

<211> 41

<212> DNA

<213> Homo sapiens

<400> 424

gagggcatcc agctctgggg rctggacctg ggggtttgtg g

41

&lt;210&gt; 425

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 425

ttccacgctc cttccttggc ygagtgccct ccctccgctg a

41

&lt;210&gt; 426

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 426

cctgcagaag ggggtccctt ycatgtccaa gcagtaatgg c

41

&lt;210&gt; 427

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 427

taatggctgc agcatggagc rttgtggggg cattgagaca g

41

&lt;210&gt; 428

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 428

ccctcttctc caggggtctg yggcgactgg aagaaccact t

41

<210> 429

<211> 41

<212> DNA

<213> Homo sapiens

<400> 429

atgaagcctt gtgccatctc rctgtgtcgt gccagcacct g

41

<210> 430

<211> 41

<212> DNA

<213> Homo sapiens

<400> 430

ctgccagaga gaaacaggaa rggaggaaga gccacacaat t

41

<210> 431

<211> 41

<212> DNA

<213> Homo sapiens

<400> 431

caggaaatga tttggagaag kactggtgcc attgttggca c

41

<210> 432

<211> 41

<212> DNA

<213> Homo sapiens

<400> 432

ggcctcttag gtttcagcca mgacaggtga ctcttagcac c

41

<210> 433

<211> 41

<212> DNA

<213> Homo sapiens

<400> 433

caacgtaaga gcgcttctca wtgtccagct cctttgtttc t

41

<210> 434

<211> 41

<212> DNA

<213> Homo sapiens

<400> 434

aatcccagca ctttgggagg mggagatgtg cggatggatc a

41

<210> 435

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 435

gactgtatgt ctgctattca yataggaaca aataattcat g

41

&lt;210&gt; 436

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 436

aaatgaaacc aacaccaaca stgcagagaa gcaaacaaaa g

41

&lt;210&gt; 437

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 437

aagcagctaa attgtgttcc rtacaggtgc aattaggcag g

41

&lt;210&gt; 438

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 438

atggtaaagt tcgcctgggt rcagtatgtc agcatcctgc t

41

&lt;210&gt; 439

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 439

gcacttatcc tagaaaggcc rtttctgaag actcagcagg a

41

<210> 440

<211> 41

<212> DNA

<213> Homo sapiens

<400> 440

ctggctcccg ccggccaccc ygggaccgca gccacgtctg a

41

<210> 441

<211> 41

<212> DNA

<213> Homo sapiens

<400> 441

gtagccccag gacacccccca kcctcaacat cccattctgg g

41

<210> 442

<211> 41

<212> DNA

<213> Homo sapiens

<400> 442

ggagcttcca gtggcttggt yacccccgac tcttcgtcca t

41

<210> 443

<211> 41

<212> DNA

<213> Homo sapiens

<400> 443

gcagggtcct gcactctgca rggggcaatc acagggtggga g

41

<210> 444

<211> 41

<212> DNA

<213> Homo sapiens

<400> 444

agcactggaa aaagtacagt ygcacttgta gcggagggtgg g

41

<210> 445

<211> 41

<212> DNA

<213> Homo sapiens

<400> 445

ctcctgtccc cgcatgagg sgaaggagca gaggtgagat c

41

<210> 446

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 446

gccccaggtc tcatagctcc scattggcag tgctgggatt t

41

&lt;210&gt; 447

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 447

cactgggcag taattggggc rtgggatggg catgagggcc c

41

&lt;210&gt; 448

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 448

gtgttttggc gacttgaaga yctccctagt tcgcgggagt a

41

&lt;210&gt; 449

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 449

acctgagcag aaaattctct ycttcgctga aatgaaaatt g

41

&lt;210&gt; 450

<211> 41

<212> DNA

<213> Homo sapiens

<400> 450

aagaatttgt aaacatcaca rgcaacttgc agttatattc g

41

<210> 451

<211> 41

<212> DNA

<213> Homo sapiens

<400> 451

ctataactat ttcaaacata ygaaacaggc ataattggat t

41

<210> 452

<211> 41

<212> DNA

<213> Homo sapiens

<400> 452

atttagaata ttcatttacc magaaatcca aatataacct g

41

<210> 453

<211> 41

<212> DNA

<213> Homo sapiens

<400> 453

ctatccagtg acaagaggaa mcaagaacct cagttcaggg g

41

&lt;210&gt; 454

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 454

agtgggcgga ggcgagaagc rtcagtgttc attcctttgc t

41

&lt;210&gt; 455

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 455

gctacatctt gtcagccagt yagaatttta aacacagcca g

41

&lt;210&gt; 456

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 456

acggaaatat ttgtgctgat wcttactgac tgaaatcacc t

41

&lt;210&gt; 457

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 457

catggcctcc gttccttcat rttacagagg tgtgagggga g

41

<210> 458

<211> 41

<212> DNA

<213> Homo sapiens

<400> 458

cacagtggcc ttatgccttg yagcagggcg cctctcaggc t

41

<210> 459

<211> 41

<212> DNA

<213> Homo sapiens

<400> 459

tcctttgatg tatcaagttt ygtgctgaat gttttcagtg t

41

<210> 460

<211> 41

<212> DNA

<213> Homo sapiens

<400> 460

ttacacctgg agaggagcac ygcagcggtc cttaatactg c

41

<210> 461

<211> 41

<212> DNA

<213> Homo sapiens

<400> 461

agaagcacat tcctgaggaa ytgaaggtgg gcacagccag g

41

<210> 462

<211> 41

<212> DNA

<213> Homo sapiens

<400> 462

cctgatcatt ccctagctgg ratgaggggt gcactctgga a

41

<210> 463

<211> 41

<212> DNA

<213> Homo sapiens

<400> 463

tctggaaggc ctctcacttc staacccccca ttctggatct a

41

<210> 464

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 464

gattgttcta aatggtgtgt rtgggtctac tgaatgtcca c

41

&lt;210&gt; 465

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 465

acctgaaggg actggtggcc ktccagacag gcctgttttt g

41

&lt;210&gt; 466

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 466

ataattatgg gctctgctta ygaaatttag cttcagacag g

41

&lt;210&gt; 467

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 467

tgctgcccac agagtcggtg rtcactcctg gccactgttt g

41

&lt;210&gt; 468

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 468

ccaggagcat tttcttccat ygaggagatc cccgaaaacg t

41

<210> 469

<211> 41

<212> DNA

<213> Homo sapiens

<400> 469

ctgagttctg tacttggcag rttgatcgga ggaccacaga g

41

<210> 470

<211> 41

<212> DNA

<213> Homo sapiens

<400> 470

catgaagtg acatcatttt rttaatagaa attagcaggc a

41

<210> 471

<211> 41

<212> DNA

<213> Homo sapiens

<400> 471

aggaggaacc ggacagagac scgggggatc cagtttgaag a

41

<210> 472

<211> 41

<212> DNA

<213> Homo sapiens

<400> 472

gagaccctgg aggacgatgc yccatacatc ttaaaagagg c

41

<210> 473

<211> 41

<212> DNA

<213> Homo sapiens

<400> 473

tcaaatatct ttattagacc yggggctaac caggtgaaga t

41

<210> 474

<211> 41

<212> DNA

<213> Homo sapiens

<400> 474

ccacaccct cctttgagga ygcccggggt ctccacagg c

41

<210> 475

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 475

ggaagcatca cacagcggtta rgagccggtt ccttcaggtg t

41

&lt;210&gt; 476

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 476

tgaggttctc ctggctagtc rgggtggctt cacccatcac t

41

&lt;210&gt; 477

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 477

gcaagggggc tgctgaaatc scagagactt ttgcagcatc a

41

&lt;210&gt; 478

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 478

gggtggtgtg gtgtccaggg rttcatcttt ccagaatcca t

41

&lt;210&gt; 479

<211> 41

<212> DNA

<213> Homo sapiens

<400> 479

aggggaggct tttctacct ragaagggga gtgtctttga g

41

<210> 480

<211> 41

<212> DNA

<213> Homo sapiens

<400> 480

tccagcagtg cggcttcctg kcaacaagggt aggccctggt g

41

<210> 481

<211> 41

<212> DNA

<213> Homo sapiens

<400> 481

ccagcagtgc ggcttcctgg yaacaaggta ggccctggtg c

41

<210> 482

<211> 41

<212> DNA

<213> Homo sapiens

<400> 482

cacacgaagg tgtgcactca yggcctgcag ggcacccagg t

41

<210> 483

<211> 41

<212> DNA

<213> Homo sapiens

<400> 483

gcatgctttg ctcatctgga mtctccagaa gcagggaaca g

41

<210> 484

<211> 41

<212> DNA

<213> Homo sapiens

<400> 484

gccgagaccc tcagcaggat rgtgcagtta cagggtgag c

41

<210> 485

<211> 41

<212> DNA

<213> Homo sapiens

<400> 485

caggtttcta aaataataat ygaaaggtga gtgatgttta c

41

<210> 486

<211> 41

<212> DNA

<213> Homo sapiens

<400> 486

taaaattttc aggtctgctt ragagttaaa ggcaaagagt t 41

<210> 487

<211> 41

<212> DNA

<213> Homo sapiens

<400> 487

ccttcttccc caaccctga yggcagactt gggaattga a 41

<210> 488

<211> 41

<212> DNA

<213> Homo sapiens

<400> 488

tgcagcttaa gatctgcctt rgtatttgaa gagatataaa c 41

<210> 489

<211> 41

<212> DNA

<213> Homo sapiens

<400> 489

aaatatagaa tgaaaattat rtattacaaa gctcttaaaa a 41

<210> 490

<211> 41

<212> DNA

<213> Homo sapiens

<400> 490

caatgagaaa ataaagcaag sagggtagaa ggaggtagaa t 41

<210> 491

<211> 41

<212> DNA

<213> Homo sapiens

<400> 491

tctaagaaag tagggactat ragaaccctt atgtatctat a 41

<210> 492

<211> 41

<212> DNA

<213> Homo sapiens

<400> 492

ctatgagaac ccctatgtat ytatatccac catagtattc t 41

<210> 493

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 493

aaaaggcagg ttggaagatg maggagggga gtatgcagaa a

41

&lt;210&gt; 494

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 494

taaccatctt gcttaacctt rtcattttta gccaaagtc t

41

&lt;210&gt; 495

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 495

aaatgataca tattcaggaa rtcaaaaatc tctgacttag a

41

&lt;210&gt; 496

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 496

aaatctctga cttagatacc yggcaataat aatcaaagt a

41

&lt;210&gt; 497

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 497

aattttgaaa gaaattgaag ktctgtggtt tttatttatc a

41

<210> 498

<211> 41

<212> DNA

<213> Homo sapiens

<400> 498

taggtatgta ggagggtccc sttatataca tagttgttaa t

41

<210> 499

<211> 41

<212> DNA

<213> Homo sapiens

<400> 499

tctattccat gaccacaatt kttacctgta acttgaatag t

41

<210> 500

<211> 41

<212> DNA

<213> Homo sapiens

<400> 500

cctaggaccc aacatgagac rtaatatacc atcagtaaaa t

41

<210> 501

<211> 41

<212> DNA

<213> Homo sapiens

<400> 501

ggtgtccatt ccctcaagaa kttatacttt gtgttacaca c

41

<210> 502

<211> 41

<212> DNA

<213> Homo sapiens

<400> 502

agtaacaggc tagtagataa yataaataac tgaggccaac g

41

<210> 503

<211> 41

<212> DNA

<213> Homo sapiens

<400> 503

tacatgaact tagagaatca rgtagatcac acacaccaac a

41

<210> 504

<211> 41

<212> DNA

<213> Homo sapiens



<400> 504

cacaccaaca ataaaattac rcagaatgat aaaagaattt g

41

<210> 505

<211> 41

<212> DNA

<213> Homo sapiens

<400> 505

ttctgatcat gtagtaacaa ytataaagaa aataataatg t

41

<210> 506

<211> 41

<212> DNA

<213> Homo sapiens

<400> 506

aggcaaagca gaaccttttg mctcacacaa cattatatta t

41

<210> 507

<211> 41

<212> DNA

<213> Homo sapiens

<400> 507

agattttatt cctctctctt yttgagttga agaaataagt t

41

<210> 508

<211> 41

<212> DNA

<213> Homo sapiens

<400> 508

cacctttcaa gggtaagtgg maaaaaatag aaattcaa a

41

<210> 509

<211> 41

<212> DNA

<213> Homo sapiens

<400> 509

aatcttgctc tttgaaccat wctgtcagtg agagtcaggg a

41

<210> 510

<211> 41

<212> DNA

<213> Homo sapiens

<400> 510

tgttacagag gacttaaaac rgttgtcttg cttgcaaac g

41

<210> 511

<211> 41

<212> DNA

<213> Homo sapiens

<400> 511

cagcctccca agtagctagg rctacagaca tgtgcaacca t

41

<210> 512

<211> 41

<212> DNA

<213> Homo sapiens

<400> 512

atcatgtgtg gaactggaat ygggtgttat tcaagcaaaa a

41

<210> 513

<211> 41

<212> DNA

<213> Homo sapiens

<400> 513

acatttgcgg taaagcgata rtttattcca agctaatacat g

41

<210> 514

<211> 41

<212> DNA

<213> Homo sapiens

<400> 514

aaatggaggc tacatggcta mggctgaatg agcatgacct t

41

<210> 515

<211> 41

<212> DNA

<213> Homo sapiens

<400> 515

tacaacttgg aggatgcatt kaggctgcag aatatatgtt t 41

<210> 516

<211> 41

<212> DNA

<213> Homo sapiens

<400> 516

gtctagcaga aaatgaaaag rtggaaggat gagaaaaatt a 41

<210> 517

<211> 41

<212> DNA

<213> Homo sapiens

<400> 517

ctatTTTTTA aagcgtgcat ycttacataa gacttaaata t 41

<210> 518

<211> 41

<212> DNA

<213> Homo sapiens

<400> 518

aaggcaatga gagacgaaag kgcttgcaca aggtcaccgc g 41

<210> 519

<211> 41

<212> DNA

<213> Homo sapiens

<400> 519

atgtattgta cccttcaacc rttatgtacc gagtatctac t

41

<210> 520

<211> 41

<212> DNA

<213> Homo sapiens

<400> 520

acaattgaca aggcaagatt ytgaaaacaa atcaaaaata a

41

<210> 521

<211> 41

<212> DNA

<213> Homo sapiens

<400> 521

tgagagaaga gaagcaggaa sttgagagag gaggaagaga g

41

<210> 522

<211> 41

<212> DNA

<213> Homo sapiens

<400> 522

tatgcattct tctatattat rcaagacaaa aatttttagga t

41

<210> 523

<211> 41

<212> DNA

<213> Homo sapiens

<400> 523

acactcaggg aacatgcctt rgttcaccat cacaagatta g

41

<210> 524

<211> 41

<212> DNA

<213> Homo sapiens

<400> 524

ctgcttgaaa aatgagtaag yttctgatgc tttctttgca c

41

<210> 525

<211> 41

<212> DNA

<213> Homo sapiens

<400> 525

agcaccttct cccagtacac rgtggtggat gagaatgcag t

41

<210> 526

<211> 41

<212> DNA

<213> Homo sapiens

<400> 526

ttcgtttgaa gtcacgcgtc rgcttgacac catggtatga t 41

<210> 527

<211> 41

<212> DNA

<213> Homo sapiens

<400> 527

tgaaactgga cttgaaagta maaatgagac aaaaatttat g 41

<210> 528

<211> 41

<212> DNA

<213> Homo sapiens

<400> 528

taacccttat actgtattgc rtcactttct aacaggcagc t 41

<210> 529

<211> 41

<212> DNA

<213> Homo sapiens

<400> 529

gtctgtgtgg ttgttggggt rttgcctgcc agtgttcaac t 41

<210> 530

<211> 41

<212> DNA

<213> Homo sapiens

<400> 530

gttgagaaac actgcctagt mccgtctgtg gtcctagaat t 41

<210> 531

<211> 41

<212> DNA

<213> Homo sapiens

<400> 531

ctatcacaga ataatccgca yagaacacta agcagattac g 41

<210> 532

<211> 41

<212> DNA

<213> Homo sapiens

<400> 532

tgtgcagaca cagaaagttt yacttaactt tctacaccta a 41

<210> 533

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 533

tcagtagcat gtgctgcact ygctgcagta gttcaatggg a

41

&lt;210&gt; 534

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 534

aacctcaacc tttagaaggc raaccttacg gtgtttataa a

41

&lt;210&gt; 535

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 535

tgaattgaat taattaatac rtgtatttga tgtatcaaac a

41

&lt;210&gt; 536

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 536

tggcatagcg taaagagact wggaaaaatg gaataaagcc a

41

&lt;210&gt; 537

<211> 41

<212> DNA

<213> Homo sapiens

<400> 537

aagtctaacc atatcaccaa yttagtatgc cattgtacta t

41

<210> 538

<211> 41

<212> DNA

<213> Homo sapiens

<400> 538

gctgctatatt atttcaagta rgccacaaaa tticcttatt t

41

<210> 539

<211> 41

<212> DNA

<213> Homo sapiens

<400> 539

cattttttaga tgaagaccaa kgttgtgaaa gcaaataaat a

41

<210> 540

<211> 41

<212> DNA

<213> Homo sapiens

<400> 540

tctccacatt tggtagcc yacaggatca tcatattatg a

41

&lt;210&gt; 541

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 541

tccctcatct cattgccac rctcattgct ttaattcagt c

41

&lt;210&gt; 542

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 542

atttacattt tgtaaggcta yaattgtatc ttttaagaaa a

41

&lt;210&gt; 543

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 543

gatatagtaa atgcatctcc yagagtaata ttacttaac a

41

&lt;210&gt; 544

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 544

aaacacttgt tatgagttaa sttggattac attttgaaat c

41

<210> 545

<211> 41

<212> DNA

<213> Homo sapiens

<400> 545

aatataaaca tagagctaga rtcattattat cataacttatt a

41

<210> 546

<211> 41

<212> DNA

<213> Homo sapiens

<400> 546

tacatcaaaa gaaataaatc yaagaaggaa taaacacatt t

41

<210> 547

<211> 41

<212> DNA

<213> Homo sapiens

<400> 547

tcagcactct gtgtctagct waaggtttgt aaatgcacca a

41

<210> 548

<211> 41

<212> DNA

<213> Homo sapiens

<400> 548

gaacccatca attccgtaca mattttggtg actttgaaga g

41

<210> 549

<211> 41

<212> DNA

<213> Homo sapiens

<400> 549

aaatttacc taaccagcct sactctctgc cactttctgt t

41

<210> 550

<211> 41

<212> DNA

<213> Homo sapiens

<400> 550

ttgtgtgcca cgtggggaag rctgaggacc gggagcagct g

41

<210> 551

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 551

tgtctcagtt cacaggatca ygactctttt tctcgaaact g

41

&lt;210&gt; 552

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 552

ggcttttgtgt gtgctccatt rtctgaactg ggcctgctgg g

41

&lt;210&gt; 553

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 553

tttgacttcc ttacatgggt ractgtgtga gtcactctgt t

41

&lt;210&gt; 554

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 554

gcattgggtc atgtgtatgt stgagtgggg ctgaatgtaa g

41

&lt;210&gt; 555

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 555

cagggatgaa ggagcagagc ygctgagagg ccacacaggt g

41

<210> 556

<211> 41

<212> DNA

<213> Homo sapiens

<400> 556

tttcctggg gttttccctt ygcattccat cctccctgag c

41

<210> 557

<211> 41

<212> DNA

<213> Homo sapiens

<400> 557

agcgacgtta tgaaattccc macacttcac atttctataa t

41

<210> 558

<211> 41

<212> DNA

<213> Homo sapiens

<400> 558

ctccttagcc cccagaggg ycccaacttt aagagcatac t

41

<210> 559

<211> 41

<212> DNA

<213> Homo sapiens

<400> 559

aggggtgcag gatggggtgt kagctggagg gcagggggta g

41

<210> 560

<211> 41

<212> DNA

<213> Homo sapiens

<400> 560

ccccccacat aagaggtggg stgtccaag actccgaggg a

41

<210> 561

<211> 41

<212> DNA

<213> Homo sapiens

<400> 561

cgcccagctc cagggaggcc wctgaagaca gaggtcagcc a

41

<210> 562

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 562

cagccggccg tgcgccgggc ygcgtcatg tgcgaggacg c

41

&lt;210&gt; 563

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 563

ccgtcgggtct gtcggcccc sctccctcgg ggctgggcag g

41

&lt;210&gt; 564

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 564

gctcctcagc atctgctcac rccagggacc cacaccttc t

41

&lt;210&gt; 565

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 565

aaggctccat cctgagacaa maagtccagt gtgacctgcc c

41

&lt;210&gt; 566

<211> 41

<212> DNA

<213> Homo sapiens

<400> 566

aggaggaaga cctgtatccc rgggacaccc tcctccactc c

41

<210> 567

<211> 41

<212> DNA

<213> Homo sapiens

<400> 567

cctccaggct gctaggcaga yggcctcctc taaagcccag c

41

<210> 568

<211> 41

<212> DNA

<213> Homo sapiens

<400> 568

tgaccagccc tgccacccga kgagccttgg gcagaaccct g

41

<210> 569

<211> 41

<212> DNA

<213> Homo sapiens

<400> 569

actaccatgg aggccccac racagagcgc tgccccttga c

41

&lt;210&gt; 570

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 570

aataataata ataataataa waaatgtatt ttaaagatgg c

41

&lt;210&gt; 571

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 571

cgtgcccaaa cctggtgatg ratcccttac tatttagaat a

41

&lt;210&gt; 572

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 572

ccatccatac ttgcccacaa ragaaggaac atgagcttta t

41

&lt;210&gt; 573

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 573

gatttgaaat cctgtggaca yggggatgaat tacttttaaa a

41

<210> 574

<211> 41

<212> DNA

<213> Homo sapiens

<400> 574

attttctgtt tgtaaattcc rgtatcaggg ctatagtta a

41

<210> 575

<211> 41

<212> DNA

<213> Homo sapiens

<400> 575

actattctcc ctcttcgact ygtgatgact ataataatct t

41

<210> 576

<211> 41

<212> DNA

<213> Homo sapiens

<400> 576

tacctattga agtaagccta ygtcatatcc acctatttgt t

41

<210> 577

<211> 41

<212> DNA

<213> Homo sapiens

<400> 577

ccactgattc ccagagctag ktcattaaga agacagtgcc t

41

<210> 578

<211> 41

<212> DNA

<213> Homo sapiens

<400> 578

cagattactg gagggctact rtttgctcac caatgcaaat g

41

<210> 579

<211> 41

<212> DNA

<213> Homo sapiens

<400> 579

gggatatttg tctcctttct scccagtgca tggttgaaac c

41

<210> 580

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 580

atatatattc caattaaaa ncaaaataaa tttccgaaac t

41

<210> 581

<211> 41

<212> DNA

<213> Homo sapiens

<400> 581

caacaaagag attttttaaa rctttttaaa acaccagaca g

41

<210> 582

<211> 41

<212> DNA

<213> Homo sapiens

<400> 582

cagcactatt cgcaatagca ragatgtgga atcaatctaa a

41

<210> 583

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 583

agcagaaaaa ataaataatg ygtactaggc ttactacctg c

41

&lt;210&gt; 584

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 584

caaaacaaac ccccatgaca ygagtttatac tatataacaa a

41

&lt;210&gt; 585

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 585

ataagattaa tatctgcata maaatctttg tttacagctt g

41

&lt;210&gt; 586

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 586

tgtttacagc ttgttatata ytgaattatg tctgctcccc c

41

&lt;210&gt; 587

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 587

ttaatctgat aggattggtg scittataag aaaaagaaaa g

41

<210> 588

<211> 41

<212> DNA

<213> Homo sapiens

<400> 588

ttgctctctc cccagtgcag ktaccaagga aaggccatgt g

41

<210> 589

<211> 41

<212> DNA

<213> Homo sapiens

<400> 589

tcaattggct ttatctgcga ytctggaatc aggcaatact c

41

<210> 590

<211> 41

<212> DNA

<213> Homo sapiens

<400> 590

gcgattctgg aatcaggcaa yactccatth cataaaacag a

41



<210> 591

<211> 41

<212> DNA

<213> Homo sapiens

<400> 591

cctcagcttg cacttggcct rctaattctt atataatcca a

41

<210> 592

<211> 41

<212> DNA

<213> Homo sapiens

<400> 592

agcctgcctg ctggcagtga sccatcatcc accattctca c

41

<210> 593

<211> 41

<212> DNA

<213> Homo sapiens

<400> 593

gacataaggt tctctctatc wgcattgtatg gtttgccttg t

41

<210> 594

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 594

gactgcgtga ccaggtggaa ytagcctcag catggaaggg t

41

&lt;210&gt; 595

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 595

gttggtgtag ttatactag rttatgaatg atagccttaa t

41

&lt;210&gt; 596

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 596

tgccaagttg cagggtgggg saggactcac aatagtgcac c

41

&lt;210&gt; 597

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 597

atagagcctt acctgaagaa rggtgtgcag tatgcatggt t

41

&lt;210&gt; 598

<211> 41

<212> DNA

<213> Homo sapiens

<400> 598

ctgttcaggg aggatcccgg rttccaacat ggttctttat t

41

<210> 599

<211> 41

<212> DNA

<213> Homo sapiens

<400> 599

gcctccgtct cacaccaaca rgcagatttc cccaccacgg c

41

<210> 600

<211> 41

<212> DNA

<213> Homo sapiens

<400> 600

gaggggaagat tgtgcagccc yatcactgtg tcggggccca g

41

<210> 601

<211> 41

<212> DNA

<213> Homo sapiens

<400> 601

ttttcagggc ctgtccctcc ratgggggca ggcttctccc a

41

&lt;210&gt; 602

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 602

gtcttgggac agaggagttg rgggagttga aattaggccc t

41

&lt;210&gt; 603

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 603

gtcatttctg atgggggtcat yagggaaatg ggattgagcg c

41

&lt;210&gt; 604

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 604

tgtgtggtag aagcagcatt ytaagcacta cgtgaattaa c

41

&lt;210&gt; 605

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 605

gcctttcatgc aggattgatac stagtgggat gtattaggaa g 41

<210> 606

<211> 41

<212> DNA

<213> Homo sapiens

<400> 606

ttttgggaac acctgtctag rtgttaagag ccagtggaa a 41

<210> 607

<211> 41

<212> DNA

<213> Homo sapiens

<400> 607

taaacttggt ttattgttta yatgttactc tgaacattga a 41

<210> 608

<211> 41

<212> DNA

<213> Homo sapiens

<400> 608

taaaattagt atctctctct rtaagttcat tatttaagat a 41

<210> 609

<211> 41

<212> DNA

<213> Homo sapiens

<400> 609

tagaaaaatg tgtatcacac ygtaagtgtt cagtaatgtt a

41

<210> 610

<211> 41

<212> DNA

<213> Homo sapiens

<400> 610

ctttatctag atattatagt mcctcatttt acttttaaac t

41

<210> 611

<211> 41

<212> DNA

<213> Homo sapiens

<400> 611

gtaaagagat taaacacaca ygcacacata catataccta t

41

<210> 612

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 612

agaaaacctg agaatgaca yaatttattt aaagccatag t

41

&lt;210&gt; 613

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 613

gccagtaatt acatgtagcc rtttacctca aattagctaa t

41

&lt;210&gt; 614

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 614

taatgaaagt aaatgtttca rcttccttaa caaaagttga a

41

&lt;210&gt; 615

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 615

aaatgtcaga aatTTTTTgt rccgtcagtc atcaacaaga a

41

&lt;210&gt; 616

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 616

aaggagcata cagaaaactt sccatgatgg ggcctttgtg g

41

<210> 617

<211> 41

<212> DNA

<213> Homo sapiens

<400> 617

tctaatagtc cccagtatta rtggtgcaca tcttcatgtc c

41

<210> 618

<211> 41

<212> DNA

<213> Homo sapiens

<400> 618

tcttttttca tctctgttaa yatcaaccat acagttaaac a

41

<210> 619

<211> 41

<212> DNA

<213> Homo sapiens

<400> 619

ttagtattgg aactaaactt ytctagtgtt gagaactttg g

41



<210> 620

<211> 41

<212> DNA

<213> Homo sapiens

<400> 620

aaattctaac taattaaagg kttcatcctt tagtaactag a 41

<210> 621

<211> 41

<212> DNA

<213> Homo sapiens

<400> 621

tataaagttg tggttaatga rtatatatga ataagaatat t 41

<210> 622

<211> 41

<212> DNA

<213> Homo sapiens

<400> 622

agaaggaaaa aggccatttt sttaagaatc cctgagatat g 41

<210> 623

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 623

atagaaggag aggctatact rcctccttaa gtctcaggac c

41

&lt;210&gt; 624

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 624

actaaggata aaaatatggc rtactcagtc acattggaac t

41

&lt;210&gt; 625

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 625

aggccttaat gacatatttc ycctcacata aagatacaac a

41

&lt;210&gt; 626

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 626

taatgacata tttcccctca mataaagata caacatgctt t

41

&lt;210&gt; 627

<211> 41

<212> DNA

<213> Homo sapiens

<400> 627

tatggtaact gaagaaaatg rcattaagtt cctaaagtta t

41

<210> 628

<211> 41

<212> DNA

<213> Homo sapiens

<400> 628

attctgttaa gaagttctta yattaagaaa tattgtctcc t

41

<210> 629

<211> 41

<212> DNA

<213> Homo sapiens

<400> 629

gagaatatag gagcttctgc rtatgcctga aagtcagtca g

41

<210> 630

<211> 41

<212> DNA

<213> Homo sapiens

<400> 630

attactcatt taatgaataa rtggattact gagcactgtc t

41

<210> 631

<211> 41

<212> DNA

<213> Homo sapiens

<400> 631

actgctgtcc aggggtccat ytggggctga gcccagctgg a

41

<210> 632

<211> 41

<212> DNA

<213> Homo sapiens

<400> 632

ctgtcctctt gttcgggagg ygtggcagct tttcccttac t

41

<210> 633

<211> 41

<212> DNA

<213> Homo sapiens

<400> 633

aactatgaac tagctgtggc yctctcccg c tgggtgttca a

41

<210> 634

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 634

tcctgccccaa gaatgctgcc naaaaacggc cccaggcctc a

41

<210> 635

<211> 41

<212> DNA

<213> Homo sapiens

<400> 635

tctggaccct gaacaggagg sgacatcgtg acaaagcaaa t

41

<210> 636

<211> 41

<212> DNA

<213> Homo sapiens

<400> 636

atcagcaggc gatggttact stgggcgggt aaatcaggtg a

41

<210> 637

<211> 41

<212> DNA

<213> Homo sapiens

<400> 637

gtaaagggaa agggcggtcc wcaactgaga agtgaagatt c

41

<210> 638

<211> 41

<212> DNA

<213> Homo sapiens

<400> 638

attatttgct ctacctcagg rtttttcggg tcaagcgaga t

41

<210> 639

<211> 41

<212> DNA

<213> Homo sapiens

<400> 639

ctcatcaggt gtgtgtcaga kggcttggtg ctggccagtc t

41

<210> 640

<211> 41

<212> DNA

<213> Homo sapiens

<400> 640

attgtaatag attaacaaag ktgatgaaag tagtgtacat a

41

<210> 641

<211> 41

<212> DNA

<213> Homo sapiens

<400> 641

tgtaatagat taacaaagtt katgaaagta gtgtacataa t 41

<210> 642

<211> 41

<212> DNA

<213> Homo sapiens

<400> 642

gtgtacataa tgtacatagt rtagttgaac acatagcaag c 41

<210> 643

<211> 41

<212> DNA

<213> Homo sapiens

<400> 643

gatggctata tgaccaataa wgatacatat aaatgtatag a 41

<210> 644

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 644

agaaagattg cagctgatag rtgtcaggct aataaggaca c

41

&lt;210&gt; 645

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 645

aatggcagag gactggaaat ktacatttta agctttaccc t

41

&lt;210&gt; 646

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 646

gccttctctt tcagcacatt yccaattata cttccaattc c

41

&lt;210&gt; 647

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 647

atttcaattt ttttttttgg rgggggagac agagtctcac t

41

&lt;210&gt; 648

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 648

aattacctcc caaaggcctc wtatcccaga tactatcaca t

41

<210> 649

<211> 41

<212> DNA

<213> Homo sapiens

<400> 649

ttctcaaatt tcattataca statcttca acccaaagtt t

41

<210> 650

<211> 41

<212> DNA

<213> Homo sapiens

<400> 650

tttaactata gatgccttct kctcctcttg tgtttgattt a

41

<210> 651

<211> 41

<212> DNA

<213> Homo sapiens

<400> 651

tcactgcagc ctcaacctct ygggctcagg tgatcctcca a

41

<210> 652

<211> 41

<212> DNA

<213> Homo sapiens

<400> 652

aaaaaaattt gtagatatgg ktactcccta tgttgcccag g

41

<210> 653

<211> 41

<212> DNA

<213> Homo sapiens

<400> 653

ctccctatgt tgcccaggct ratcttgaat tcttgggctc a

41

<210> 654

<211> 41

<212> DNA

<213> Homo sapiens

<400> 654

gtcagacaat ggccttcagc rtcctctctt tgcagaatat g

41

<210> 655

<211> 41

<212> DNA

<213> Homo sapiens

<400> 655

ttttggagac acttttcaga sagagcgttt ccagcatctt c

41

<210> 656

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 656

tccctttcca tttttaagtt ngactttttt ttttcacctc t

41

<210> 657

<211> 41

<212> DNA

<213> Homo sapiens

<400> 657

atacacatat ggaacaatta mctaaaaact taaggtaata t

41

<210> 658

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 658

gggtttatag tgttcccccc ntccccgccc ccaaaagacc c

41

<210> 659

<211> 41

<212> DNA

<213> Homo sapiens

<400> 659

ccattctatt tgtcaactgc rtaacacagg cgtagaagtg g

41

<210> 660

<211> 41

<212> DNA

<213> Homo sapiens

<400> 660

aaatgtctgt ccttttggca ygttgtgaag gagaacacta a

41

<210> 661

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 661

attggagggtg acgatatctc ygtgatgctg ggggagaaat c

41

&lt;210&gt; 662

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 662

attgctatag aagagagtaa ygtaaagcag aaatagtttt c

41

&lt;210&gt; 663

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 663

tttgaaatta gtgtctttaa yagttatctt ttccacaga g

41

&lt;210&gt; 664

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 664

aagaattctg tacttccaat ktataatgaa tactttctta g

41

&lt;210&gt; 665

<211> 41

<212> DNA

<213> Homo sapiens

<400> 665

tctgtgtgca tgaacatgca ygcgtgcacg cgcacacaca c

41

<210> 666

<211> 41

<212> DNA

<213> Homo sapiens

<400> 666

tatgtggagc aatttgaaaa wagtatattc taagccatta a

41

<210> 667

<211> 41

<212> DNA

<213> Homo sapiens

<400> 667

ggatcactgc taaagatccc rgagtcactc catgtcccag t

41

<210> 668

<211> 41

<212> DNA

<213> Homo sapiens

<400> 668

ggagaagggg accgcatgca ragggtggca ggcagggagg g

41

&lt;210&gt; 669

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 669

gggtaaacc c attttgaata ytagcattgc caatatcctg t

41

&lt;210&gt; 670

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 670

aaagaaaatc atacaactca rcatccagtt ggctttttaa g

41

&lt;210&gt; 671

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents a or deletion

&lt;400&gt; 671

tcagcttcct cctttgccaa nccaagagat gagctggcct g

41

&lt;210&gt; 672

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents g or deletion

&lt;400&gt; 672

tgacctctcc ctgtagtgt nggggcagct cttccagtg t

41

&lt;210&gt; 673

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents c or deletion

&lt;400&gt; 673

gcccttaaag ggaagttcat ncttctctgc cttccaggct c

41

&lt;210&gt; 674



<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents (cctgy)<sub>x</sub>

<400> 674

tccgcgagga tacagcggcc ncagacaata tgtagccgt g

41

<210> 675

<211> 41

<212> DNA

<213> Homo sapiens

<400> 675

acaattgaca aggcaagatt ytgaaaacaa atcaaaaata a

41

<210> 676

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gaa or deletion

<400> 676

actgcataga aatttaagaa ncttgtttta ttcctctcca g

41

<210> 677

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ag or deletion

<400> 677

gttaatgctt tcccactctc ngggaaggat ttgcattttg a

41

<210> 678

<211> 41

<212> DNA

<213> Homo sapiens

<400> 678

taactgctgt aaagttacac rgggaagccc tttcccgaca a

41

<210> 679

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 679

aactgctgta aagttacacg rggaagccct ttcccgacaa a

41

&lt;210&gt; 680

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 680

ttcagatccc tgtaagccag rtattatfff taccatfff a

41

&lt;210&gt; 681

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 681

tacgaagtgg ctaatttaca yagtacttag ccagatgacc g

41

&lt;210&gt; 682

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 682

gatgaccgaa ggactcagta yccgagggcc cctaacagaa a

41

&lt;210&gt; 683

<211> 41

<212> DNA

<213> Homo sapiens

<400> 683

gaccgaagga ctcagtacc ragggcccct aacagaaaac a

41

<210> 684

<211> 41

<212> DNA

<213> Homo sapiens

<400> 684

ccgaaggact cagtaccga rggcccctaa cagaaaacac a

41

<210> 685

<211> 41

<212> DNA

<213> Homo sapiens

<400> 685

tagaggggag actaagccct sggagtagct ttcgatcag a

41

<210> 686

<211> 41

<212> DNA

<213> Homo sapiens

<400> 686

taagccctgg gagtagcttt sggatcagag gaagtcctgc t

41

&lt;210&gt; 687

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 687

aattaaattc ccaggttggg rccaccactt tttagtctga c

41

&lt;210&gt; 688

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 688

gcggagagaa ggctgaggga yaccgcgggc agggaggaga a

41

&lt;210&gt; 689

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 689

cggagagaag gctgagggaac wccgcgggca gggaggagaa g

41

&lt;210&gt; 690

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 690

gagaaggctg agggacaccg ygggcaggga ggagaaggga g

41

<210> 691

<211> 41

<212> DNA

<213> Homo sapiens

<400> 691

agggagaaga gctttgctcc rttaggatct ggctggtgtc t

41

<210> 692

<211> 41

<212> DNA

<213> Homo sapiens

<400> 692

tgctggagct gcaggctgtc ycttcctga gccccggtga g

41

<210> 693

<211> 41

<212> DNA

<213> Homo sapiens

<400> 693

agtgagtgcc cggctctctc yctgctcttg cttatgggaa g

41

<210> 694

<211> 41

<212> DNA

<213> Homo sapiens

<400> 694

tgtgggtggc tgcaatgtgt rgggggaagg tggcctcctc c

41

<210> 695

<211> 41

<212> DNA

<213> Homo sapiens

<400> 695

actatcagca gttattctca ygactccaat gtcattgcaa c

41

<210> 696

<211> 41

<212> DNA

<213> Homo sapiens

<400> 696

ctgccacccc attagaagga rctttctact ttccctgagc t

41

<210> 697

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 697

gctggtctgg atccagaggc wgccaggtgc ttgggcgctc c

41

&lt;210&gt; 698

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 698

caccgtatat ttgagcccaa stgcttggac gccttcccaa a

41

&lt;210&gt; 699

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 699

tttgagccca agtgcttgga ygccttccca aatctgaagg a

41

&lt;210&gt; 700

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 700

cagcaccgtg tagaatcttc rtaagtgtta gctgttactg t

41

&lt;210&gt; 701

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 701

atttgctcct ggccatctac ycagactgtc tgtctgtctg t

41

<210> 702

<211> 41

<212> DNA

<213> Homo sapiens

<400> 702

ggaacatccg cggggtgagc saggggtccgc tgggcggtgg g

41

<210> 703

<211> 41

<212> DNA

<213> Homo sapiens

<400> 703

gggacggggg tgcgtggggg yggggaagtg tggagcagct g

41

<210> 704

<211> 41

<212> DNA

<213> Homo sapiens

<400> 704

gactgcatct cctctcccca sccttagaggt gttaagatca g

41

<210> 705

<211> 41

<212> DNA

<213> Homo sapiens

<400> 705

agcaggccct ggtctcctct ytgcccttgc atatgggaag g

41

<210> 706

<211> 41

<212> DNA

<213> Homo sapiens

<400> 706

ttgattcctt ctggtgagtt mttggctcttg ctgactctaa g

41

<210> 707

<211> 41

<212> DNA

<213> Homo sapiens

<400> 707

tcctcttggg gggttcatgg yctggctggc ttcaggagtg a

41

<210> 708

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 708

accttagct agacacagag ygctgatttg tgcatttaca a

41

&lt;210&gt; 709

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 709

ttgtgcattt acaatccttt rgctaggcag aaaagttctc c

41

&lt;210&gt; 710

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 710

ctcagccccg agctgtcccc rtgttgcatg aaggagcagc a

41

&lt;210&gt; 711

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 711

ttctgctggg catagtaagg ygcttgagaa ttcttgctcc c

41

&lt;210&gt; 712

<211> 41

<212> DNA

<213> Homo sapiens

<400> 712

ccaacgccgg cattagtcgc kcctgcgcac ggccctgtgg a

41

<210> 713

<211> 41

<212> DNA

<213> Homo sapiens

<400> 713

agcctaactt ctataccttg raggcactgt ctacaaaaa a

41

<210> 714

<211> 41

<212> DNA

<213> Homo sapiens

<400> 714

ctgttggact gggtggggtc kttataagat tggtgtattt t

41

<210> 715

<211> 41

<212> DNA

<213> Homo sapiens

<400> 715

cccagtgggg caacaagcct rtatgctgag caggaggcag a

41

&lt;210&gt; 716

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 716

ttggctggat tggggtgcta ygctcagagt gagtctgtgt t

41

&lt;210&gt; 717

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 717

gatgctttcc cagtcctgga kctgcataaa gaataacttg c

41

&lt;210&gt; 718

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 718

gctttcccag tcctggatct rcataaagaa taacttgcatt

41

&lt;210&gt; 719

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 719

agcagggccc accagccgac mgcctcgaag cgccgtgagc c

41

<210> 720

<211> 41

<212> DNA

<213> Homo sapiens

<400> 720

tgtctgacca gccgccccgc yaaggagtca caagagggca g

41

<210> 721

<211> 41

<212> DNA

<213> Homo sapiens

<400> 721

aaaatactgc atcaaaacca rgccacgctc tgttgggggg a

41

<210> 722

<211> 41

<212> DNA

<213> Homo sapiens

<400> 722

ctgcatcaaa accaggccac rctctgttgg ggggacacca a

41

<210> 723

<211> 41

<212> DNA

<213> Homo sapiens

<400> 723

tctcccaaca ctgctctcca ragccccttg gcaaccatgt t

41

<210> 724

<211> 41

<212> DNA

<213> Homo sapiens

<400> 724

caccactgtt taaggccctg sgggggcaga gttaaacaca a

41

<210> 725

<211> 41

<212> DNA

<213> Homo sapiens

<400> 725

ccttgaaagg catcgactac ragacggtgc ccatcaatct c

41

<210> 726

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 726

agaaggagga gtttgctggc yctgtcccct ctgggccagg g

41

&lt;210&gt; 727

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 727

tatctgaacc agcctcccag rctgtcttgg gcctgacagt t

41

&lt;210&gt; 728

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 728

ctccccggg ctccagcaaa sttttctttg ttcgctgcag t

41

&lt;210&gt; 729

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 729

ccccgggcct ccttcctggt yccgcctct cccgccatgc c

41

&lt;210&gt; 730

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 730

gtgtgtgcgc gtgcgtgtgc rtgtgtgtgc gtgtgtgtgt g

41

<210> 731

<211> 41

<212> DNA

<213> Homo sapiens

<400> 731

cccgtggct gaggccctag yccccctgcc ctgcagatct c

41

<210> 732

<211> 41

<212> DNA

<213> Homo sapiens

<400> 732

taaagagtgt cccaggcgtc ygtgccgccc aatggggcac a

41

<210> 733

<211> 41

<212> DNA

<213> Homo sapiens

<400> 733

tgctgccgct gccgtggggc rgggcgtggg cggtgctggc t

41

<210> 734

<211> 41

<212> DNA

<213> Homo sapiens

<400> 734

agtgtctgtg agagaagcag rttctggagg gtggagtgtg g

41

<210> 735

<211> 41

<212> DNA

<213> Homo sapiens

<400> 735

ggggttatac agagcccctc sgccccacc acacatatgc a

41

<210> 736

<211> 41

<212> DNA

<213> Homo sapiens

<400> 736

gtatggcagg agtgggggtcc yggcaagcca tagaggtatg g

41

<210> 737

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 737

cgccacctgt gaccagcagc kgatgcctcc ttggccacca g

41

&lt;210&gt; 738

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 738

ggtcagcatt caaagtcaag wgcgccttcc tatcttcccg t

41

&lt;210&gt; 739

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 739

ggtcacccat gccgcctgct mcccctccttc ccaggggcaa g

41

&lt;210&gt; 740

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 740

tcccaggggc aagcagagac ygagaacatt ccagagatta g

41

&lt;210&gt; 741

<211> 41

<212> DNA

<213> Homo sapiens

<400> 741

ttacaagtggt tccaaaggaa wcgtagcctgc ttctaaacct g

41

<210> 742

<211> 41

<212> DNA

<213> Homo sapiens

<400> 742

cctcgtgatt tgcccacctc rgcctcccaa agtgctggga t

41

<210> 743

<211> 41

<212> DNA

<213> Homo sapiens

<400> 743

aggccgaggt gggcggatca ygaggtcagg agatcgagac c

41

<210> 744

<211> 41

<212> DNA

<213> Homo sapiens

<400> 744

tgtttattcc ttgcatagcc rtaatatataa gtatgaattt t

41

&lt;210&gt; 745

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 745

actgtgttct aatgatgact rtgatgctta aacgattaag g

41

&lt;210&gt; 746

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 746

atcagagtgc tatgttgcag rtatatgaac tttggcttca t

41

&lt;210&gt; 747

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 747

acaaaaaggc cctaacagcg mtaaattccat tcacttcggg a

41

&lt;210&gt; 748

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 748

cgctctaaac cgctacggtg rctctgctgg ggacaaatta t

41

<210> 749

<211> 41

<212> DNA

<213> Homo sapiens

<400> 749

ctgggggagt agatatatgt wtttgagaat gagaggagta a

41

<210> 750

<211> 41

<212> DNA

<213> Homo sapiens

<400> 750

agcctttgcg caggcactcc yatatttcag cctatgcgag c

41

<210> 751

<211> 41

<212> DNA

<213> Homo sapiens

<400> 751

agaaaatgcc ccttctttat stgggggtggc agcacggagc c

41

<210> 752

<211> 41

<212> DNA

<213> Homo sapiens

<400> 752

cgagtttaca agctacataa yagcgtcggg ggcaagtaag t

41

<210> 753

<211> 41

<212> DNA

<213> Homo sapiens

<400> 753

aataaaattc ctgagtttct stcactcgct cttacagtac c

41

<210> 754

<211> 41

<212> DNA

<213> Homo sapiens

<400> 754

tgtaattagg caacaggaaa rttgtactat ctttcaaag c

41

<210> 755

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 755

tcttccatcc tcctaacata yagttagctt ccactctcca a

41

&lt;210&gt; 756

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 756

tgaatatgca atgcaattgt sgggggatag ttacttttca t

41

&lt;210&gt; 757

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 757

cagcatgacc catctaaacc satgttgact ctcccaggcc t

41

&lt;210&gt; 758

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 758

cttgcctttt tgttgtgggg kgtggggtgg tcacagagaa g

41

&lt;210&gt; 759

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 759

gtgcagagaa gaaaacaaag yggggaaggt ggaaagggga t 41

<210> 760

<211> 41

<212> DNA

<213> Homo sapiens

<400> 760

tcacagatat tttattttcc ygactgaaac taacttaatt c 41

<210> 761

<211> 41

<212> DNA

<213> Homo sapiens

<400> 761

acttaattct acctaatttg sgtggggagt agttggccaa a 41

<210> 762

<211> 41

<212> DNA

<213> Homo sapiens

<400> 762

ggagtagttg gccaaatcat saaattgtta actttttgct a 41

<210> 763

<211> 41

<212> DNA

<213> Homo sapiens

<400> 763

aacatattgt gtaatcaacc ytaggtgtta aaaaagggtt g

41

<210> 764

<211> 41

<212> DNA

<213> Homo sapiens

<400> 764

atcccagcac tttgggaggc saaggcaggc agattgcttg a

41

<210> 765

<211> 41

<212> DNA

<213> Homo sapiens

<400> 765

aaaaaataca aaaattagcc rgatgtggtg gtgcacacct g

41

<210> 766

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 766

tgggtggtgca cacctgtagt yccagctact tgggaggctg a

41

&lt;210&gt; 767

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 767

tcttatgcta ctatatTTTT yttcttggga atttgagaaa a

41

&lt;210&gt; 768

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 768

atgacttacc tttatttcca kttacatttt ttttctaaat a

41

&lt;210&gt; 769

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 769

agtctgattg tggatgatgta kgtatagtca tgccacagtg a

41

&lt;210&gt; 770

<211> 41

<212> DNA

<213> Homo sapiens

<400> 770

ttgcaaaaag agcaaaatct mggtgaaatg tattgtgtaa a 41

<210> 771

<211> 41

<212> DNA

<213> Homo sapiens

<400> 771

gagacacagg ctttcctaag mtatgacaac accataacta g 41

<210> 772

<211> 41

<212> DNA

<213> Homo sapiens

<400> 772

aaaggcaccc actggaggtg mattattttg ccatcacctg a 41

<210> 773

<211> 41

<212> DNA

<213> Homo sapiens

<400> 773

gaagagtgtt gtcatgaagg yggagtcact gcccaaggga g

41

&lt;210&gt; 774

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 774

ttatcccata tgtgccca rtagccggt ctgagcagag c

41

&lt;210&gt; 775

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 775

ctttcttatg catttgcaaa mcaatgattc tgtctgctgt g

41

&lt;210&gt; 776

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 776

gcattggtgg aaggtgggct yggatcggtcc ccgggcctgg c

41

&lt;210&gt; 777

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 777

ggaaatcact tcttattcaa yagttccata aaagctggcc g

41

<210> 778

<211> 41

<212> DNA

<213> Homo sapiens

<400> 778

acaccacatt tactttatgt sttacatagt tagtgagatc a

41

<210> 779

<211> 41

<212> DNA

<213> Homo sapiens

<400> 779

cacacttggt cacatgcaga yacccatggg catccaagag t

41

<210> 780

<211> 41

<212> DNA

<213> Homo sapiens

<400> 780

cagatgtgat ttactccaa rccatttttag ctctagaaga g

41

<210> 781

<211> 41

<212> DNA

<213> Homo sapiens

<400> 781

tgagctctga gagcaaatga ragatgttag caccctaaac a

41

<210> 782

<211> 41

<212> DNA

<213> Homo sapiens

<400> 782

taaacatcac cccaaaggat wcctaccatt ctccttctga g

41

<210> 783

<211> 41

<212> DNA

<213> Homo sapiens

<400> 783

tcttcgtagt atctaatacc ytttttggtta gccttaaagt t

41

<210> 784

<211> 41

<212> DNA

<213> Homo sapiens

<400> 784

taataacaac cgaatgtcta rtaaatagact ctcctctgag c

41

<210> 785

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ta

<400> 785

gttgatgaac agctgtctca ngctgacatc ctccttgata a

41

<210> 786

<211> 40

<212> DNA

<213> Homo sapiens

<400> 786

gttgatgaac agctgtctca gctgacatcc tccctgataa

40

<210> 787

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 787

agggctaaaa atcctgatta wacctacctt gaagctttta a

41

&lt;210&gt; 788

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 788

aataaaagta catggcatat mtttgatggg aacagacttg t

41

&lt;210&gt; 789

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 789

aactccatgt gtataaagca rcaccacaga tgacacttcc a

41

&lt;210&gt; 790

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 790

ggattgtgcc atcccttgat bggcaatgac cttttacttt t

41

&lt;210&gt; 791

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 791

ggattgtgcc atcccttgat bggcaatgac cttttacttt t

41

<210> 792

<211> 41

<212> DNA

<213> Homo sapiens

<400> 792

aacatacaaa aattagccgg rtatggtggc gggcacctgt a

41

<210> 793

<211> 41

<212> DNA

<213> Homo sapiens

<400> 793

catacaaaaa ttagccggat rtggtggcgg gcacctgtaa t

41

<210> 794

<211> 41

<212> DNA

<213> Homo sapiens

<400> 794

ttccctgaaa caaccattg yggccatcca gaatcagcca a

41

<210> 795

<211> 41

<212> DNA

<213> Homo sapiens

<400> 795

cacagcctca tgggtcagcc yactccagag ggtgcattcc c

41

<210> 796

<211> 41

<212> DNA

<213> Homo sapiens

<400> 796

ggaagcaggg gccctggcca yagccgctgg cagtaagcag g

41

<210> 797

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents acac

<400> 797

tatagtctac aaagaatgaa naaagatcat aacaatagct a

41

<210> 798

<211> 40

<212> DNA

<213> Homo sapiens

<400> 798

tatagtctac aaagaatgaa aaagatcata acaatagcta

40

<210> 799

<211> 41

<212> DNA

<213> Homo sapiens

<400> 799

tccctgctgc cctcccctgc racttttata ttccctttgc c

41

<210> 800

<211> 41

<212> DNA

<213> Homo sapiens

<400> 800

agggccccag cctggagtgg stgaagaaac tgtgagcacc t

41

<210> 801

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 801

tccttacctg cactggcacc rgctctggag ccccagtc t

41

&lt;210&gt; 802

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 802

agactctagc atggtacctg saacataagg ttccttagaa a

41

&lt;210&gt; 803

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 803

ggcatattgc tagttttctc kgtctcaatt tcatcatcta t

41

&lt;210&gt; 804

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 804

acaaattttg aactgttcac ytaacacagg ctttttctga a

41

&lt;210&gt; 805

<211> 41

<212> DNA

<213> Homo sapiens

<400> 805

aggtatctaa aaggtattgc matttggtca ttggttcttt c

41

<210> 806

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gatttgtggtatccag

<400> 806

aagtcagttt tgttgtcttg ntgtaacatt taaccaaaaa a

41

<210> 807

<211> 40

<212> DNA

<213> Homo sapiens

<400> 807

aagtcagttt tgttgtcttg tgtaacattt aaccaaaaaa

40

<210> 808

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ag or deletion

<400> 808

attaagtagc agttaataaa ntctagactg ctgattcata c

41

<210> 809

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ta or deletion

<400> 809

tataggaatt ttaaaatata nggatattga aacattcagt t

41

<210> 810

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 810

tttataattt atatatgtta ygtgctttct tttgtatagc t

41

&lt;210&gt; 811

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 811

actaccaagg agcgcggcgg rcagccggat agcaggacgc t

41

&lt;210&gt; 812

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 812

ggggagcggc gtccgccaag ytactttctac cgccagcacc t

41

&lt;210&gt; 813

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 813

attcagcagt ttgaaaacat ratgtttgcc tggcagaata c

41

&lt;210&gt; 814



<211> 41

<212> DNA

<213> Homo sapiens

<400> 814

agttaaagaa tctgaaaagt stcagaaatg atttaccctg a

41

<210> 815

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 815

ctgtaaaatg gggatgctga nggtacctac ctgacctatg a

41

<210> 816

<211> 40

<212> DNA

<213> Homo sapiens

<400> 816

ctgtaaaatg gggatgctga ggtacctacc tgacctatga

40

<210> 817

<211> 41

<212> DNA

<213> Homo sapiens

<400> 817

accaaccaa ggtctatcaa rggggtgtcc tctttgcacc c

41

<210> 818

<211> 41

<212> DNA

<213> Homo sapiens

<400> 818

aaagggaacc atcagaaccc ygtgatgaaa tgagaatcgg c

41

<210> 819

<211> 41

<212> DNA

<213> Homo sapiens

<400> 819

gctcccgat tccggctggc rggggttagg gcagggtaga g

41

<210> 820

<211> 41

<212> DNA

<213> Homo sapiens

<400> 820

agaggagtca cgtgcttcgg rgagagcctt tataggacgt t

41

&lt;210&gt; 821

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 821

tcacctcct cctaagccgg racccttcgc tctccccgaa t

41

&lt;210&gt; 822

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 822

ctccctggga acccccagct mgtcaccct tcagcccggg a

41

&lt;210&gt; 823

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 823

cctgggaacc cccagctagt sacccttca gcccgggacc c

41

&lt;210&gt; 824

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 824

tccttttagac ccctgaaacg sagggctgac atcctgccac c 41

<210> 825

<211> 41

<212> DNA

<213> Homo sapiens

<400> 825

gccgccggga atctgtgccc scctccatca tcatgtcgtc g 41

<210> 826

<211> 41

<212> DNA

<213> Homo sapiens

<400> 826

gcctccaccc ctggggcgcc kcctccatca cccaccctc c 41

<210> 827

<211> 41

<212> DNA

<213> Homo sapiens

<400> 827

gggccttgtg tacgctggag rccaaaagtg ggaagggagg a 41

<210> 828

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cagaggct

<400> 828

agggtccagg gtcccctgct naacactggc cgaagagaaa g

41

<210> 829

<211> 40

<212> DNA

<213> Homo sapiens

<400> 829

agggtccagg gtcccctgct aacactggcc gaagagaaag

40

<210> 830

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ca or deletion

<400> 830

tgatagagcc ctgatccacc nctctctgaa acttctttgc t

41

<210> 831

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ag or deletion

<400> 831

cattttgtga ctgaggtgac ngggcccaca gcggggccat g

41

<210> 832

<211> 41

<212> DNA

<213> Homo sapiens

<400> 832

tttgtgttct ctattctgac ycgcatgagg taaagctgag a

41

<210> 833

<211> 41

<212> DNA

<213> Homo sapiens

<400> 833

caaacctaga caaagtgtgc yctttatcca gaagtgagca g

41

<210> 834

<211> 41

<212> DNA

<213> Homo sapiens

<400> 834

ttcaggagat aaaaagctct rattgctcag gcctgagatg g

41

<210> 835

<211> 41

<212> DNA

<213> Homo sapiens

<400> 835

gaagttgtct tgtaagtgag rtaagaatat gtactcacat a

41

<210> 836

<211> 41

<212> DNA

<213> Homo sapiens

<400> 836

tcattgtttt gcaaagagat kcccctaacc cagctttctt t

41

<210> 837

<211> 41

<212> DNA

<213> Homo sapiens

<400> 837

gaggagacac caggaggcgc rttgatgggtt acagattcct c

41

<210> 838

<211> 41

<212> DNA

<213> Homo sapiens

<400> 838

tttatttctg gaccaagtaa rgatgggtcc gtggcccaca c

41

<210> 839

<211> 41

<212> DNA

<213> Homo sapiens

<400> 839

gtcatacaag gggagcctcc rggatagaag tgcagaaact t

41

<210> 840

<211> 41

<212> DNA

<213> Homo sapiens



<400> 840

attctttttt cactactagg ytgtttcctc cacatctgac t

41

<210> 841

<211> 41

<212> DNA

<213> Homo sapiens

<400> 841

aaagaaaaag cactgtgtga wctgccatgg ccgcttctgc a

41

<210> 842

<211> 41

<212> DNA

<213> Homo sapiens

<400> 842

gattctctaa tgaaaaataa kacttttttt tgcatttttt t

41

<210> 843

<211> 43

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 23

<223> n represents gtaaa

<400> 843

ggtcattgtg catgatactt aanaaaaaaac taagctgtgt aat

43

<210> 844

<211> 42

<212> DNA

<213> Homo sapiens

<400> 844

ggtcattgtg catgatactt aaaaaaaact aagctgtgta at

42

<210> 845

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 845

ctcattttgg aaagactctc naccttgctg taccaaaaat g

41

<210> 846

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 846

ctcatttttg aaagactctc accttgctgt accaaaaatg

40

&lt;210&gt; 847

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 847

cagcaccctg tagaggcctc rggatgctga agatgccatg a

41

&lt;210&gt; 848

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 848

gacacaggca ttctgcagac rctagacaat tttagtggca g

41

&lt;210&gt; 849

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 849

gatggctctt tgtagaacia kgcagattct caaaggtgac c

41

&lt;210&gt; 850

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 850

accacagtta aagaaaaaat yacaagccat tgcgctagag a

41

<210> 851

<211> 41

<212> DNA

<213> Homo sapiens

<400> 851

cacaccctat tttggtttct sttctccact tttcccctcg t

41

<210> 852

<211> 41

<212> DNA

<213> Homo sapiens

<400> 852

ttcccctcgt tcttggtccc ycttttctct ctcctgggcc c

41

<210> 853

<211> 41

<212> DNA

<213> Homo sapiens

<400> 853

attcatatga gcacaatgga ratgataata ttacaatacc a

41

<210> 854

<211> 41

<212> DNA

<213> Homo sapiens

<400> 854

ggcttgatgt tcagcctgag rcaagaatta ggagtgttta g

41

<210> 855

<211> 41

<212> DNA

<213> Homo sapiens

<400> 855

aatgtatcca aaagagattc kcattcctgc catatgaaga a

41

<210> 856

<211> 41

<212> DNA

<213> Homo sapiens

<400> 856

gacaaatata aattactaag rtcattttta ggagtgatag g

41

<210> 857

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 857

aatttcttcc cagaatggac yaaaggcatc ctctgttccc a

41

&lt;210&gt; 858

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 858

atctctggta atattcatatc rgattatttg taatcccttt a

41

&lt;210&gt; 859

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 859

attcctagtt ctttgtccct yaagtttggt ggtcaccttg t

41

&lt;210&gt; 860

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 860

agaaaatagt catgaatggc yccaactaac actagtcttt a

41

&lt;210&gt; 861

<211> 41

<212> DNA

<213> Homo sapiens

<400> 861

gtcatttgat tacctgagta magtgtactg ttacctgttt g

41

<210> 862

<211> 41

<212> DNA

<213> Homo sapiens

<400> 862

atattataaa ttctttgatg mcttgggggt cttattcaac t

41

<210> 863

<211> 41

<212> DNA

<213> Homo sapiens

<400> 863

attgtgtaga gtaatgacag yagagctgtc aactttttta a

41

<210> 864

<211> 41

<212> DNA

<213> Homo sapiens

<400> 864

gcagagctgt caactttttt waaaaataa ttttagctta a

41

&lt;210&gt; 865

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 865

ttttttaaaa aaataatttt rgcttaaaaa aattaaaaat t

41

&lt;210&gt; 866

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 866

atcattgctg tttaaaagtt yaagtagtgt gaatttcagt a

41

&lt;210&gt; 867

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 867

aaccaatcct tttatttttt wtcttccaga aactttgatt t

41

&lt;210&gt; 868

&lt;211&gt; 41

&lt;212&gt; DNA



<213> Homo sapiens

<400> 868

gggtgtgtgt gatgttttga ygttttgatt gattgccttc t

41

<210> 869

<211> 41

<212> DNA

<213> Homo sapiens

<400> 869

ctttctcacc ccttgactg yagtggtttt gtgccactct t

41

<210> 870

<211> 41

<212> DNA

<213> Homo sapiens

<400> 870

gccaggaag atgcctattc mcacagtgt tatgctcctt t

41

<210> 871

<211> 41

<212> DNA

<213> Homo sapiens

<400> 871

gatttttctc cttcttcaat rtaagcttcc cttaaaataa a

41

<210> 872

<211> 41

<212> DNA

<213> Homo sapiens

<400> 872

tctaaactca aaacagggttt rtttggttat tgtttaggct g

41

<210> 873

<211> 41

<212> DNA

<213> Homo sapiens

<400> 873

tatagttttg ccttttccag satattacat atatggtag a

41

<210> 874

<211> 41

<212> DNA

<213> Homo sapiens

<400> 874

ctttcatttc ttttcatagc ytgatagctc atttctttat a

41

<210> 875

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 875

ggattatgcg tacttggaat rtacttggat agcgggtgatt a

41

&lt;210&gt; 876

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 876

acattaattt tgatggagta kcacaatgcc tccagaggct g

41

&lt;210&gt; 877

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 877

gcatgcaatc agttatatag yctagataag aattacaatt c

41

&lt;210&gt; 878

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 878

tcctcttgaa attgtagata kgtatctaca catttctcat c

41

&lt;210&gt; 879

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 879

gaaaagatag atgtataaat raccaaaaat tcgtgaagaa a

41

<210> 880

<211> 41

<212> DNA

<213> Homo sapiens

<400> 880

ctacaaatat attctaaatg ygtaatcatg gataagtaca a

41

<210> 881

<211> 41

<212> DNA

<213> Homo sapiens

<400> 881

tgtttttcaa gcctttaaac rgctgtggaa ccctgtgctc a

41

<210> 882

<211> 41

<212> DNA

<213> Homo sapiens

<400> 882

ccagctactt gggaggctga rgtgggagga tcacttgagc c

41

<210> 883

<211> 41

<212> DNA

<213> Homo sapiens

<400> 883

acagcgggtct gtcttcctgc rgttctcata ggctagctta c

41

<210> 884

<211> 41

<212> DNA

<213> Homo sapiens

<400> 884

tacactaaag tgtctcttac rtttatactt gagaaagtgt t

41

<210> 885

<211> 41

<212> DNA

<213> Homo sapiens

<400> 885

tgcagacttt caggtgggta sgatgaggga ttgctgctgc t

41

<210> 886

<211> 41

<212> DNA

<213> Homo sapiens

<400> 886

aaaactgagt cagaacgccc rtgctcagaa aacaggggcg t

41

<210> 887

<211> 41

<212> DNA

<213> Homo sapiens

<400> 887

gtgccagcac ttaggaatta kgaccttcta atgaagttct t

41

<210> 888

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tc

<400> 888

taaacagtag gggcaagata ngagtggaaa cagccaagat t

41

<210> 889

<211> 40

<212> DNA

<213> Homo sapiens

<400> 889

taaacagtag gggcaagata gagtggaaac agccaagatt

40

<210> 890

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 890

tggtttctct tctccacttt ncccctcggt cttgtccccc c

41

<210> 891

<211> 41

<212> DNA

<213> Homo sapiens

<400> 891

tcctaggggg tcgtcgtggt scagacagtt tagcagaaca g

41

<210> 892

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 892

gtgttagcaa tggctcacgc ytcgtttgt tgccttggt t

41

&lt;210&gt; 893

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 893

tttgttgccc ttgtttgttt kgtccattga ccacgttgga c

41

&lt;210&gt; 894

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 894

acgttggaaca gcattttttt rttcctttaa ctaacgggaa a

41

&lt;210&gt; 895

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 895

ttttgaaaag ttagcccagg rttgcattgc aaataacaaa a

41

&lt;210&gt; 896



<211> 41

<212> DNA

<213> Homo sapiens

<400> 896

tatctcagaa tatctcagga rcatttagta gacagctatg c

41

<210> 897

<211> 41

<212> DNA

<213> Homo sapiens

<400> 897

aagccctaaa atagatagtg kcaatgggaa tgaaaacaag a

41

<210> 898

<211> 41

<212> DNA

<213> Homo sapiens

<400> 898

ttttgaaacg aggtctcact rtgttgtcca ggctgggctt g

41

<210> 899

<211> 41

<212> DNA

<213> Homo sapiens

<400> 899

gagtgcggtg gcgcgatctc ratctcgggt cactgcagcc t

41

&lt;210&gt; 900

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 900

ggaggccaag gcaggcagat ygcctaagt caggagtttg a

41

&lt;210&gt; 901

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 901

ggccaacatg gcgaaacccc rtctctacta aaaatacaaa a

41

&lt;210&gt; 902

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 902

ctgtatgtct taatttttaa ktaaatttgc attttatata t

41

&lt;210&gt; 903

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 903

gcaccactgt ttaatgctag rattcgaaag aggttggtaa t

41

<210> 904

<211> 41

<212> DNA

<213> Homo sapiens

<400> 904

attactttta gaaaacgtgt yttagctgat actcaggcat a

41

<210> 905

<211> 41

<212> DNA

<213> Homo sapiens

<400> 905

aaaaattggt atattagtta yaccttggtt caaaaattgc a

41

<210> 906

<211> 41

<212> DNA

<213> Homo sapiens

<400> 906

gataaagtct cactatgttg yccaggttga tctcaaactc c

41

<210> 907

<211> 41

<212> DNA

<213> Homo sapiens

<400> 907

ctgaaaatac aaaaattagc ygggtgtggt ggcattgtgcc t 41

<210> 908

<211> 41

<212> DNA

<213> Homo sapiens

<400> 908

ttacagttag ccgagatcac kccactgcgc tccagcctgg g 41

<210> 909

<211> 41

<212> DNA

<213> Homo sapiens

<400> 909

acacatttaa ttttttacat ygaaaatact gcagttatgg t 41

<210> 910

<211> 41

<212> DNA

<213> Homo sapiens

<400> 910

agaaaacatg tattcagaaa yaggaattca aggttacagt g

41

<210> 911

<211> 41

<212> DNA

<213> Homo sapiens

<400> 911

cactgtgtag caatttatgg ygaattttcc aaagtggcaa a

41

<210> 912

<211> 41

<212> DNA

<213> Homo sapiens

<400> 912

tctaggataa ttataattaa waataatcat agtaacaatg g

41

<210> 913

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

&lt;400&gt; 913

aaatgtattg tctgtgcttt naacattttg taatagtaaa t

41

&lt;210&gt; 914

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 914

tctgccacaa ggagctagga ycacgctcac ctcacgattt c

41

&lt;210&gt; 915

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 915

cgggggtcagg cgcagcggcg ygcccagtc agagagctcc t

41

&lt;210&gt; 916

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 916

aaagctgtgt caaatgtact rctttagatc tggactgtga a

41

&lt;210&gt; 917

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 917

ggtgggtgag cagtcagttc rgagctcctg atgtgggagt g

41

<210> 918

<211> 41

<212> DNA

<213> Homo sapiens

<400> 918

aactgaatac agccctgtcc wgagggcttg caaagtgaat c

41

<210> 919

<211> 41

<212> DNA

<213> Homo sapiens

<400> 919

gaaaaaaaaat cttaatgcca kggaagacgt tttttaata c

41

<210> 920

<211> 41

<212> DNA

<213> Homo sapiens

<400> 920

attaatggga aaatctacat staaaattca ttttattgta a

41

<210> 921

<211> 41

<212> DNA

<213> Homo sapiens

<400> 921

ttcatttta ctaattttat ktctccatt ttgtgaatgg g

41

<210> 922

<211> 41

<212> DNA

<213> Homo sapiens

<400> 922

ataaaattat gatattatta rtactaatat agccagccat a

41

<210> 923

<211> 41

<212> DNA

<213> Homo sapiens

<400> 923

aatatatata attataggaa yctcagagta gcaaccatgg t

41

<210> 924

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 924

cacaatatag gcacaaactt mctaccaaag cactaacaag t

41

&lt;210&gt; 925

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 925

tttactatat agatatatgg watagactat agagtatctc t

41

&lt;210&gt; 926

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 926

accaaataag gtattatgca rgctcatctt tttatataag a

41

&lt;210&gt; 927

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 927

ggaaagactt gctttgccag ygtatccgaa acctctgtta t

41

&lt;210&gt; 928

<211> 41

<212> DNA

<213> Homo sapiens

<400> 928

tcgcacagct gagaagagca rggggctggt tttcagtacc c

41

<210> 929

<211> 41

<212> DNA

<213> Homo sapiens

<400> 929

agaaaagatg agtataattc rtctaactta cccattctta a

41

<210> 930

<211> 41

<212> DNA

<213> Homo sapiens

<400> 930

ctactctgtg aaagtaaggt watgttgaac aagtaaatta a

41

<210> 931

<211> 41

<212> DNA

<213> Homo sapiens

<400> 931

actttctttg gagatggagt wccagcagtt gggaatgtaa t

41

&lt;210&gt; 932

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 932

tgtgatgatt tttttttttt nggctgtatt aaccttccat t

41

&lt;210&gt; 933

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 933

tttctttctc tttttttttt ngagatacat tctcactctg a

41

&lt;210&gt; 934

<211> 41

<212> DNA

<213> Homo sapiens

<400> 934

ccaaacatag ccagcacttc yggctgtaac tccgggctgt t

41

<210> 935

<211> 41

<212> DNA

<213> Homo sapiens

<400> 935

agtgagccga gattgcacca rtgcattcca gcctgggcaa c

41

<210> 936

<211> 41

<212> DNA

<213> Homo sapiens

<400> 936

gttttcaaca aaggactcca kagtagtaga gaagtttctg t

41

<210> 937

<211> 41

<212> DNA

<213> Homo sapiens

<400> 937

attttcatca cacctcaact kaaggtataa cagccttaag a

41

&lt;210&gt; 938

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 938

ttcatcacac ctcaacttaa rgtataacag ccttaagaat g

41

&lt;210&gt; 939

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 939

aacaatgtgg tatagtgggg sgggtggtga gcaggtgtca t

41

&lt;210&gt; 940

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 940

cctgatgctc ctggctccag rgtagacctt ttccctttag a

41

&lt;210&gt; 941

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 941

tcaccacgtg tctgtagata yaggaccgca gaccttcgct t

41

<210> 942

<211> 41

<212> DNA

<213> Homo sapiens

<400> 942

aaatccttgg cttctagaat kggtcactga tggtatataa t

41

<210> 943

<211> 41

<212> DNA

<213> Homo sapiens

<400> 943

aacctctgcc tccccgattc rcgccattct cctgcctcag c

41

<210> 944

<211> 41

<212> DNA

<213> Homo sapiens

<400> 944

agtagagacg gggtttcacc rtgttagcca gcatggtctc g

41

<210> 945

<211> 41

<212> DNA

<213> Homo sapiens

<400> 945

aggcgtgagc cactgcgccc rgcctagacc ttcttcttat a

41

<210> 946

<211> 41

<212> DNA

<213> Homo sapiens

<400> 946

cccaacagct cccaatgtaa racagatcta ttaatatctt g

41

<210> 947

<211> 41

<212> DNA

<213> Homo sapiens

<400> 947

gcaacagatc ttgacctata ycccataggg tacagctgag g

41

<210> 948

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 948

atcccatagg gtacagctga sgactttaat cagaaaagga g

41

&lt;210&gt; 949

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 949

tagccttgct ttactctac ygttcctccc aaatcacacc c

41

&lt;210&gt; 950

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 950

acaaactctt aatgcgaatt ytcagatca aagtgggctt a

41

&lt;210&gt; 951

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 951

tttaatctcc tttaaatttc rcaatttcac aacctagggt a

41

&lt;210&gt; 952

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 952

tttttttttt tttttgagac raagtctcac tcttgctccc t

41

<210> 953

<211> 41

<212> DNA

<213> Homo sapiens

<400> 953

ctgtagcctc tgcctcccag rttcaggcga ttgcgtacc t

41

<210> 954

<211> 41

<212> DNA

<213> Homo sapiens

<400> 954

cagattcaag tggttctcct scctcagcct cccaagtagc t

41

<210> 955

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at or deletion

<400> 955

attataaaca ctaaacaac nggtgtgtct ctttagagg g

41

<210> 956

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 956

aggaacaagt gactaccctg naaaaagaag agatgaaaca a

41

<210> 957

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

&lt;400&gt; 957

accagacaga gttcccttta nttgttttcc tgtggcaaag a

41

&lt;210&gt; 958

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 958

ggccgctggg tacaggatgc mccttcctcc agccgcacct c

41

&lt;210&gt; 959

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 959

ggatcatggt ggtggagagg rgcttgtgtc tgggtgggttt g

41

&lt;210&gt; 960

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 960

cagttgtcga gtaagtgggtg yatagggtaa gtgctctttc t

41

&lt;210&gt; 961

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 961

caaaggagct catggcattg ygaatgggac atttcttccg t

41

<210> 962

<211> 41

<212> DNA

<213> Homo sapiens

<400> 962

tggagaaggg gaggtttctc ytagtgtgga tgcggtatgg t

41

<210> 963

<211> 41

<212> DNA

<213> Homo sapiens

<400> 963

gaccgtggtg acggaggttt yctgggcatc gatgggtggt t

41

<210> 964

<211> 41

<212> DNA

<213> Homo sapiens

<400> 964

tagcttaaat aattattggc rttcatgttc agaatgcctg a

41

<210> 965

<211> 41

<212> DNA

<213> Homo sapiens

<400> 965

tttaaacttt tatttttaaatt rtccatgaat ggggtcggta t 41

<210> 966

<211> 41

<212> DNA

<213> Homo sapiens

<400> 966

aaagatttaa acctacatat ytttatgccc aatcatttga t 41

<210> 967

<211> 41

<212> DNA

<213> Homo sapiens

<400> 967

gcgagggact cattttacag wggttggaca cttcactgtg t 41

<210> 968

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 968

ttcactgccg gagcttggcc rtgtgaaccc ggagccgggc t

41

&lt;210&gt; 969

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 969

ggtcagggtc acccttgagc ygcgcacact aaatgacggg a

41

&lt;210&gt; 970

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 970

gagggcatcc cgcgtcagtc rccagtgtcg aggcgtcagc a

41

&lt;210&gt; 971

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 971

cttcactct ggggcgggga ygctgtagaa ggagcacaaa g

41

&lt;210&gt; 972

<211> 41

<212> DNA

<213> Homo sapiens

<400> 972

gtaactgttc agtgctttct yctttggatt tcatgtaa c

41

<210> 973

<211> 41

<212> DNA

<213> Homo sapiens

<400> 973

gggacagaac gatgtggtgg rgagaagagg gcgtggcaga g

41

<210> 974

<211> 41

<212> DNA

<213> Homo sapiens

<400> 974

cgaaaacccc ctttcaactg ygaagtgggtg ggcggcatgt t

41

<210> 975

<211> 41

<212> DNA

<213> Homo sapiens

<400> 975

ctagagtggg actgggcacc yggcatgtcc cctcctgggc t

41

<210> 976

<211> 41

<212> DNA

<213> Homo sapiens

<400> 976

gcttcagaga gccaaaggtgg stcttgaggt gcatagtga g

41

<210> 977

<211> 41

<212> DNA

<213> Homo sapiens

<400> 977

agtgtagcct ccgcctcccg mttgactggc ctgcttggca a

41

<210> 978

<211> 41

<212> DNA

<213> Homo sapiens

<400> 978

aggtgcagcg gggagccggc yctcagggcg catgcgccgc c

41

<210> 979

<211> 41

<212> DNA



<213> Homo sapiens

<400> 979

tctctgagcc tgtttccact yttaaaatga ttatggatg g

41

<210> 980

<211> 41

<212> DNA

<213> Homo sapiens

<400> 980

aggcaaggca ggccgggcac rgtggctcac gcttgtaatc c

41

<210> 981

<211> 41

<212> DNA

<213> Homo sapiens

<400> 981

ggccctgagc tggcctgcgt mcagccacat cctctttcct g

41

<210> 982

<211> 41

<212> DNA

<213> Homo sapiens

<400> 982

ttcacttcat ttgcagtgag raaaccagct ccgagagggtg a

41

<210> 983

<211> 41

<212> DNA

<213> Homo sapiens

<400> 983

ttttcccaga cgtaaccgcc rtcagagcgt ggcatggagc c

41

<210> 984

<211> 41

<212> DNA

<213> Homo sapiens

<400> 984

cgctgggttc tttcccttac ygtggtctcc caggcactta c

41

<210> 985

<211> 41

<212> DNA

<213> Homo sapiens

<400> 985

tgtcagaaca ggcctatggc rcccaaccac aagtccccca a

41

<210> 986

<211> 41

<212> DNA

<213> Homo sapiens

<400> 986

cagccccaca ggcctgtgct mgctgtgtgg ggcttaggga t

41

<210> 987

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 987

cagagacctt gacccccccc natctaccat catttccaaa a

41

<210> 988

<211> 40

<212> DNA

<213> Homo sapiens

<400> 988

cagagacctt gacccccccc atctaccatc atttccaaaa

40

<210> 989

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 989

ttaaagttg acttttttct rccgggcacg gtggctcacg c

41

&lt;210&gt; 990

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 990

aaagttgact tttttctgcc rggcacggtg gctcacgcct g

41

&lt;210&gt; 991

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 991

ggcggatgaa actctcctac maagaagggc caaaccggcc g

41

&lt;210&gt; 992

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 992

ggggatgttg attacctagg ycagtaaagt aaagaaggca t

41

&lt;210&gt; 993

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 993

cttctgggcc actgtatcct rtttctttcc ctgttaccc t

41

<210> 994

<211> 41

<212> DNA

<213> Homo sapiens

<400> 994

ccctcttaga ccgtatatag ktctagcata ggatctgcac a

41

<210> 995

<211> 41

<212> DNA

<213> Homo sapiens

<400> 995

ttgtctggac catctgccac rgtagataaa gctctgaatc a

41

<210> 996

<211> 41

<212> DNA

<213> Homo sapiens

<400> 996

ggcgccatcg cactccagcc ygggcaacag agtgagactc t

41

<210> 997

<211> 41

<212> DNA

<213> Homo sapiens

<400> 997

agtgagactc tgtccccccc scaaaaaaaaa actataatcc t

41

<210> 998

<211> 41

<212> DNA

<213> Homo sapiens

<400> 998

atgatagtcc tgaaaagata yatgaaagaa caatggccgt c

41

<210> 999

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gtt or deletion

<400> 999

attagcattt ctaaaacgtt nattcaccat cccaattaat g

41

<210> 1000

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1000

cctgaacacc tggcacccca rggctggcac cccagggtg g

41

<210> 1001

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1001

gggctctcta ggggcctgtt ygatggggac agggcaggtg g

41

<210> 1002

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1002

gggcccgggc gggggaaggg sacgcagacc gcggacccta a

41

<210> 1003

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1003

acataaacag aggccgggaa sggggcgggg aggagggaga g

41

&lt;210&gt; 1004

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1004

gcggtgttaa atggggagac katgtcctag tacgagctct g

41

&lt;210&gt; 1005

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1005

gaattggcta tatgctcccc sggactggag cggcacagtc c

41

&lt;210&gt; 1006

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1006

gtacaaaacc ctttagcttt kgcaaaccctc cttaagacc c

41

&lt;210&gt; 1007



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1007

ttaagacccg atttaaagc ytcctcctc atgaagctct t

41

<210> 1008

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1008

aagctcttct ggatccactc yttcccatca ctaagttgaa a

41

<210> 1009

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1009

cccatcacta agttgaaagt magatcccct tctctttact t

41

<210> 1010

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1010

ttacagtgcc ctttatagga ragaaagaag aaattgtgtc t

41

<210> 1011

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1011

tctctgtgga gcaaataagag rgctgtctga cacttggttc c

41

<210> 1012

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1012

gaatgtttga tttgtgaaaa wcttaataac agtagttttt t

41

<210> 1013

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1013

gtgctgacaa tcttatactc yaggttgaac ctccggggaa g

41

<210> 1014

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1014

gagcctcaat cacagattct stctagctca catgaagtta a

41

<210> 1015

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1015

ggagcatgac tttgtggaag yctctcctct tccacccaga g

41

<210> 1016

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1016

gagggctgac tgtcaccctt ygataggagc ccagcactaa a

41

<210> 1017

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1017

gtgggtggga ggaattggag saggaagctt gcctaagtgt g

41

<210> 1018

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1018

gtagcttcta aatcaacgaa stgattcctg gagagcagct t

41

<210> 1019

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1019

ggaggcacct gtgacaccca rcggagtagg ggggcggtgt g

41

<210> 1020

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1020

agtgtgcata tgtgctgacc rtgggagctt gtttgtcggt t

41

<210> 1021

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1021

ggacacagga ctgtgtggtc yggatatggc atgtggctta t

41

&lt;210&gt; 1022

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1022

gctgtgggtg aagtgagtta rtggccccac tcttagagat c

41

&lt;210&gt; 1023

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1023

agtcagcca aaattgcaaa rtcataccat tcaaattaat a

41

&lt;210&gt; 1024

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1024

aagaaaagtg atttatttca rgttgctgat gcttagattg t

41

&lt;210&gt; 1025

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1025

tgcttagatt gttagagttg saaagatctg gcttgcatct t

41

<210> 1026

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1026

tctggcttgc atcttgtaca rctgacagaa ctggggctca g

41

<210> 1027

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1027

tgatagctgt tgcctgcagc rtacggacgt tcattgcgca g

41

<210> 1028

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1028

tagctgttgc ctgcagcata yggacgttca ttgcgcagtt c

41

<210> 1029

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1029

tgttgcctgc agcatacgga ygttcattgc gcagttcctg t

41

<210> 1030

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1030

agcatacgga cgttcattgc rcagttcctg tctcctgaga t

41

<210> 1031

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1031

acataaagcc tgtgtgctgc ygccaggaag actagaaacg c

41

<210> 1032

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1032

gtcaccacat acctggcact rtgctaaggc tgggaatgca g

41

&lt;210&gt; 1033

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1033

ccagcccact tcattctacc rtagttacct ccttagagta t

41

&lt;210&gt; 1034

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1034

tgtcaaagag gaactaagga ygccaggac tttctgctta g

41

&lt;210&gt; 1035

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1035

ccctctcatc acttctccaa ygctggtatc atgaacccca t

41

&lt;210&gt; 1036



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1036

gacagaagaa aagtccccag rgaagaatac tacagacttg g

41

<210> 1037

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1037

gatgggcatt tgaacttggt rtctttaaaa agtgaaatct t

41

<210> 1038

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1038

tatctgggga gtgggcattt kctgactgag gcattggctg c

41

<210> 1039

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1039

ggctacaaaa ctgtgctttc yttgggcagt aaaagaggca a

41

<210> 1040

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1040

tagagaacaa gtctaattct rttttccttg aaatagtcga a

41

<210> 1041

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1041

aagtccatga ttttttaggc raaatggcct ctttcctct t

41

<210> 1042

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1042

ctttctttca caaaattgcc ycccagagct ttctggaagg g

41

<210> 1043

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1043

ccagtcacctc agccttgcca ytgcttatgc tggctctggaa a 41

<210> 1044

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1044

gctcaccgct ctgctcaccc saccctctgg ccatctcctc t 41

<210> 1045

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1045

cagcttggtc ccagaggcct rgacctgggt cccagaggtc c 41

<210> 1046

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1046

gctggttccc cggcttggtc ycagaggcct ggatgtgtgg c 41

<210> 1047

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1047

cctaccacac catgcacgtg yacagccaag ggttgttgac t

41

<210> 1048

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1048

ctgggctctt cctggacctg rccagctaaa aggaaatctc c

41

<210> 1049

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1049

gcattggtgg tactaagaac rcatattccc tatcctatag g

41

<210> 1050

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1050

ctcccccaac attaaaagtg yaagggatgc ttattcaaat g

41

<210> 1051

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1051

ggccaagaa actgcatttt mgcatgctcc ctaaataag c

41

<210> 1052

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1052

atgctaacag tgtagagtca yatgtgatgg gaagcatcag g

41

<210> 1053

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1053

cttgctcaat ttattctgtc yatataactc aatattactg a

41

<210> 1054

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1054

catgtgaccc tcttagctcc rcggattaac tcctgtcctc a

41

<210> 1055

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1055

gaaaccttct ctgggttcct rtatcacaac ctctctctcc c

41

<210> 1056

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1056

gcaacctggc gtcatgggcc mgctgggtaa aataaaattg a

41

<210> 1057

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1057

acagtcttga ggcaataacc rtgggtaagg gttattgatc t

41

<210> 1058

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1058

cttctttcaa agcttggtggt yccactggacc acgtatgaag t

41

<210> 1059

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1059

atgaagtaga atagtttagg yccagaaagg caattaagta a

41

<210> 1060

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1060

gtgctttgat acattctgag kttcagtaaa gagacctgat g

41

<210> 1061

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1061

tgagctttgt ggcctaccaa rggagaaact ggctgcagca g

41

&lt;210&gt; 1062

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1062

catcataaag atgacattgt rggctgtcac agttggaagg c

41

&lt;210&gt; 1063

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1063

agaccacact atttagctta yttagtaata acattgcaaa g

41

&lt;210&gt; 1064

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1064

ttgcaaagaa aaattccgac raagtttttt cagcctagga a

41

&lt;210&gt; 1065



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1065

gctctggtga aattcctctc sctaccccaa acatcatcat t

41

<210> 1066

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1066

acaaatgctc accctttcag ytggaatgat tgaaattttg g

41

<210> 1067

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1067

tgattaaggt ggctactacc rggtgctttc tgcatactc g

41

<210> 1068

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1068

taggaattcc aagctgtgaa ytttttactg aagctctttg g

41

<210> 1069

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1069

atggaaattt gtttatattg wctacagatt gccaatatta t

41

<210> 1070

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1070

gaaatttggtt tatattgact rcagattgcc aatattatta g

41

<210> 1071

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1071

ctaacaatct tatttccatt sagtccttat aaaagaagtg g

41

<210> 1072

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1072

ctgacgttta agggagaccg ygtagggtccc ttgaggact g 41

<210> 1073

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1073

agtctgtaaa ttattgttct wttttttcct tagcttatgc t 41

<210> 1074

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1074

tagcaaggcc aatcatttta scaacacaca tgcttgctaa c 41

<210> 1075

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1075

ggaactgtct ggtgtccccc wgcataaggaa gctgagccag g 41

<210> 1076

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1076

attgctctgc agatcccctc rcagccctct gtcccttggt c

41

<210> 1077

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1077

ctttatgtgg gaagaaattt ktttttttga ttggggagtg g

41

<210> 1078

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1078

aaatggcctg gttctctgtc mcctttctgt ctgtatgcct c

41

<210> 1079

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1079

ggcagaaggc aaagcttagg wcctagagag tgctggacca c

41

<210> 1080

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1080

caaagcttag gacctagaga rtgctggacc acgccactca c

41

<210> 1081

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1081

cagggattta ttaatgattt mttgtgaaat gtttggaat a

41

<210> 1082

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1082

agtgccggaa tacatttgca ygtaagacag aacgctgcct g

41

<210> 1083

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1083

ggcagagggg tctcagaatc ygcatttcca acaatgtctc c

41

<210> 1084

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1084

cgtattgtct gcgggcatcc ygaggagggg gggctgaaga t

41

<210> 1085

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1085

cccctcaaga gtcagtttaa rtgttgggtca tgttagttgt c

41

<210> 1086

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1086

atgggagggc ttgtgcttca ygaaaacatt tttccagatc a

41

<210> 1087

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1087

tggggatggg gaggactggc rcagggctgc tgtgatgggg t 41

<210> 1088

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1088

ttctgcggtc cctggctccc yacctgactc caggtgaaca a 41

<210> 1089

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1089

gaaagaagtg tgggagcaaa mgcatgatgt tacatgtaga c 41

<210> 1090

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1090

agtgtctctag agacaattgg rttcaaattgt ggagcaggct g

41

&lt;210&gt; 1091

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1091

ctctatacaa tcattatgct sccattgaaa taataaatac a

41

&lt;210&gt; 1092

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1092

ctccaattcg gtagaaccag rgcttcatct tctctgtcga a

41

&lt;210&gt; 1093

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1093

gtttgcagct gctgtttttc yggcagcaca tctgtgcagg c

41

&lt;210&gt; 1094



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1094

ggcattatatt gtgaaactta yctaaaatcg aattcgggtc c

41

<210> 1095

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1095

aattaaattt ttgaaatttt rtattaaaaa ttatattagt a

41

<210> 1096

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1096

caggctcaga ggccttgcc yatcacctg gctcacgtgt g

41

<210> 1097

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1097

atgggcctgg acaacagcat mctctggttt agctggttca t

41

&lt;210&gt; 1098

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1098

cttttagaca gaaaagttac rtgggatatt atctcccaca g

41

&lt;210&gt; 1099

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1099

tatataagga gaaaccagtt raaattacct attgaagaaa c

41

&lt;210&gt; 1100

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1100

ttctgcgtag ttttgggtaa rtcacttatac ttcttttagga t

41

&lt;210&gt; 1101

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1101

cagttgcctc atcagaaaga wgaacagcat tacgcctctg c

41

<210> 1102

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1102

agttgagaac agaagatgat wgtcttttcc aatgggacat g

41

<210> 1103

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1103

tggtgttttg cttgagtaat rttttctgaa ctaagcacia c

41

<210> 1104

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1104

ctgttgccctc agtctgggct ycataggcat cagcagcccc a

41

<210> 1105

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1105

gcttcaatct caccacttcg rtctccatga tgctgtttga c

41

<210> 1106

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1106

ggttccaacc agaagagaat rtcagaaagt aagtgtgtt g

41

<210> 1107

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1107

tgaaagttca agcgcagtg cctgtgtcct tacactccac t

41

<210> 1108

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1108

aggaccttac agtgggtagt rtcaggaggg gtcaggggct g

41

&lt;210&gt; 1109

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1109

aaagcaccag cgttagcctc rgtggcttcc agcacgattc c

41

&lt;210&gt; 1110

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1110

ccctcctcat ctaaagtga yacatggggc tcatgtgcag g

41

&lt;210&gt; 1111

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1111

catgggatac tcttctgtta kcacagaaga gataaagggc a

41

&lt;210&gt; 1112

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1112

aaagctttgc cattctaggg rtcatagcca tacagggtga a

41

<210> 1113

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1113

acccttttg ccatgttgaa rccaccatct ccctgctctg t

41

<210> 1114

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1114

gtcaaagaaa agagacttgt yaagaggtaa gagccttggc t

41

<210> 1115

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1115

acctttcacc ctcaggaagc raggctgttc acacggcaca c

41

<210> 1116

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1116

ctctttactt aagtacagtg kgaggaacag cggcatcagg a

41

<210> 1117

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1117

gttagaaatt cagcaacttg sgcccagctc agacctactg a

41

<210> 1118

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1118

catacatagg aaatgacaaa ygtttatgga tggatagtct a

41

<210> 1119

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1119

tcattttaatt ctcaaaaaa katgaaaaa tgaacactca g

41

&lt;210&gt; 1120

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1120

aatggtaaaa gccacttggt ytttgcagca tcgtgcatgt g

41

&lt;210&gt; 1121

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1121

actatcatgg gagataatga ytattggtt ccatgattgg a

41

&lt;210&gt; 1122

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1122

caggaccag tgttctgagt yacctgaat gtgagcacta t

41

&lt;210&gt; 1123



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1123

tatatgattt ttaggttttg yttatcagct tcttcgcttt t

41

<210> 1124

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1124

cccttttaaaa agtaagcagt rgataaataa attcagtgaa g

41

<210> 1125

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1125

ctggatttca tgggtgccttt sattttccac atgaaggttg t

41

<210> 1126

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1126

tcttcccttt gcagagacac rccctgccag gcaggggagg a

41

&lt;210&gt; 1127

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1127

ggctccttgt tactgatttc ygtcttttct ctctgccttt t

41

&lt;210&gt; 1128

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1128

taatagccct catgctagaa rggagccgga gcctgtgtat a

41

&lt;210&gt; 1129

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1129

cctcatgcta gaagggagcc rgagcctgtg tataaggcca g

41

&lt;210&gt; 1130

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1130

ctttcctcaa tgtctcagct rtctaactgt gtgtgtaatc a 41

<210> 1131

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1131

ctgtgcaccc cactgtctgg sttttaatgt caggctgttc t 41

<210> 1132

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1132

tatgacagga ctggacacca raaataatgt caaggtaaac c 41

<210> 1133

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1133

aacctatcta aacctcagtt ycctcatctg tgaaatggag a 41

<210> 1134

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1134

aactctgtac attttatcag yagcttatcc atccattgca a

41

<210> 1135

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1135

caggcatagg tgattcagag rtgaaaggtc aagtcctga a

41

<210> 1136

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1136

aaattaaaat tactctgact kggaatccat cggttcagtaa g

41

<210> 1137

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1137

tgaaggtaag gaaaatagtg ktatttgctt ggatccactg g

41

&lt;210&gt; 1138

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1138

gaaggtaagg aaaatagtg yatttgcttg gatccactgg c

41

&lt;210&gt; 1139

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1139

agcactggaa aagtcaaacc rtaactttga gaattagtg a

41

&lt;210&gt; 1140

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1140

cttgttactc ttttttcctt stcatgggtg atagccattt g

41

&lt;210&gt; 1141

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1141

tgatgtgggc atcccgagc yccctccctg cccatcctgg a

41

<210> 1142

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1142

cattggtttt atatgcttac mtttatgtgt tagttattaa a

41

<210> 1143

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1143

aataaatggt tgattttgag wttgagtttc atagtccaaa a

41

<210> 1144

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1144

ataaatggtt gattttgagt ytgagtttca tagtccaaaa a

41

<210> 1145

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1145

agatgaaaaa ttatgtagat rataatgaat gatacggttc t 41

<210> 1146

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1146

tgtagatgat aatgaatgat rcggttctaa aaagacaggt t 41

<210> 1147

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1147

tacagccaca cttaaaatgg wccattatg aaatacatat t 41

<210> 1148

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1148

taggtgagaa aagaagtggc ytgatatttg ctgcaaagac t

41

&lt;210&gt; 1149

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1149

acaatataat ttgcttggtt yttaagagta taatttagtg a

41

&lt;210&gt; 1150

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1150

tgttttttaa gagtataatt yagtgatttt tggtaaattg a

41

&lt;210&gt; 1151

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1151

tttacattgc tacataaaat ycccctatgt acatgtacct a

41

&lt;210&gt; 1152



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1152

gatctcctct cctgtctctt wcatttttgc agtagcaatg t

41

<210> 1153

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1153

tggttgtaag aactgatttg rttggtatag ctgtgagggc c

41

<210> 1154

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1154

gtgttgctca cactcaaaat ktctgggcct tctcatttgg t

41

<210> 1155

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1155

aatatatacc ttatggcttt yccacacgca ttgacttcag g

41

<210> 1156

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1156

ttatactgac ttcaatagag stttcagaca aaaagttggt t

41

<210> 1157

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1157

ttcacaattg taaacaccac yacactgaac agcatcatcc c

41

<210> 1158

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1158

agggtgtgga ttcttgcccc sacactcccg cccatagggtc c

41

<210> 1159

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1159

aacaaaaatg tgggtgtctc yaggcacggg aaacttggtt c

41

<210> 1160

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1160

aggagcccac tgtaacaata ytgggcagcc tttttttttt t

41

<210> 1161

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1161

aacttcttcc actttttcca raatttgaat attaacgcta a

41

<210> 1162

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1162

ttccagaatt tgaatattaa ygctaaaggt gtaagacttc a

41

<210> 1163

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1163

aactatitttg aagaaaacac racattttaa tacagattga a

41

<210> 1164

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at

<400> 1164

tgacttaa at atttagacat nggtgtgtag gcctgcattc c

41

<210> 1165

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1165

tgacttaa at atttagacat ggtgtgtagg cctgcattcc

40

<210> 1166

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1166

ttctgatggg gttgttgctg ntgagaatca tgactgggtg g

41

<210> 1167

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1167

cattttctgt ctgaaccccc ncacccattc aggcagctgc t

41

<210> 1168

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1168

tccctacttc tccttttttt ncatttgcct cctccaccca c

41

<210> 1169

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 1169

cttttcaggg aggagccaaa ncgctcattg tctgtgcttc t

41

<210> 1170

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1170

cttttcaggg aggagccaaa cgctcattgt ctgtgcttct

40

&lt;210&gt; 1171

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents c

&lt;400&gt; 1171

tttagcccat cctctcccc ngccaccctc ctattgagg c

41

&lt;210&gt; 1172

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1172

tttagcccat cctctcccc gccaccctcc ttattgaggc

40

&lt;210&gt; 1173

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> modified base

<222> 21

<223> n represents t

<400> 1173

gagtgccttg ggtactctct ngatggggga ctccatgata a

41

<210> 1174

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1174

gagtgccttg ggtactctct gatgggggac tccatgataa

40

<210> 1175

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1175

gctgtatatt gtgaatgtcc ngttttcaaa agcaaagcca a

41

<210> 1176



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1176

cgatatgatat tccccattct ragtccagaa tacctagaaa t

41

<210> 1177

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1177

tgtgagtatg ggaaggggaa rcttttctgt ctgttgtccc c

41

<210> 1178

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1178

caggggctcc aggaggacga rtgtgtatcc tccattgct c

41

<210> 1179

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1179

gagaagttgg gaagtctggc yagtggggcc ggtgcctggt g

41

<210> 1180

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1180

cccagcccca gtttccccac ytgggaaggg ggctacttgt g

41

<210> 1181

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1181

ctggcccatg gaaggaggagg ragggggccc cgacggggcc a

41

<210> 1182

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1182

agggaggggga gggggccccg rcggggccac agtaaaggag t

41

<210> 1183

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1183

tgtgtatgtt cttggtaaac yagcccttgg tcttacacat c 41

<210> 1184

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1184

cctctccttt ggccaccgtt tactaccccc aactccgggc c 41

<210> 1185

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1185

ggagaagctg ttatcaccct rtttcagggt ggctgggaac c 41

<210> 1186

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1186

ccccaaggtg ggcggttcgg kgattcagag agggcagctc t 41

<210> 1187

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1187

ggctcctgct ctttgggaga rgtggggggc cgtgcctggg g

41

<210> 1188

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1188

ctgctctttg ggagaggtgg kgggccgtgc ctggggatcc a

41

<210> 1189

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1189

tcagcctcag cctctccaaa sagccaggca ttccagtaga g

41

<210> 1190

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1190

accagacacc agggcagaaa yggcacagga ccaaggagat g

41

&lt;210&gt; 1191

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1191

agatggggtg gggaagggcc rctctgggcc cagcctgctc t

41

&lt;210&gt; 1192

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1192

aaggcagccg ccctgctcaa rgcctaggcc attgtcctcc t

41

&lt;210&gt; 1193

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1193

cagaggcaga tgacagtctt ycgttaaaga tttcactgct g

41

&lt;210&gt; 1194

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1194

aatataactg atataattgg racatttcac gttggcctag t

41

<210> 1195

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1195

cacttgtgct tggacaagaa ragaaggcct acaagaaaaa g

41

<210> 1196

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1196

caatcagaaa tgtaagaaaa mctccaagaa aaatttaagt t

41

<210> 1197

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1197

accaaacttg gaagtgtaaa rttatgcatg tatgttcag t

41

<210> 1198

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1198

ttaacatagt gagtttggag ycccaggatt ttattttcct t

41

<210> 1199

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1199

caaccctcat gaattcttag ytgggatggg tccctataac a

41

<210> 1200

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1200

gtagatgagc aaatgagttc nggagagatt taaataccct a

41

<210> 1201

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1201

gtctatgcat tcatgcatcc rtctaaccag ctgtctacct a

41

<210> 1202

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1202

atgtgactta aacttcaggt rtatcaatat cccttgaatg t

41

<210> 1203

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1203

cagaaagaag acttttcaga rtatatatat aatgaatatc t

41

<210> 1204

<211> 41

<212> DNA

<213> Homo sapiens



<220>

<221> modified base

<222> 21

<223> n represents a

<400> 1204

tttgagaaaa atttaaggta ntcttctatg gcccaacttcc a

41

<210> 1205

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1205

tttgagaaaa atttaaggta tcttctatgg cccacttcca

40

<210> 1206

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1206

ccctgtgacc aagcagataa mctcatgctt tathtagtcc a

41

<210> 1207

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tt

<400> 1207

cctgtgtttg aaagaagctt natatatattt gtcttcatta t

41

<210> 1208

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1208

cctgtgtttg aaagaagctt atatattttg tcttcattat

40

<210> 1209

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1209

ctttcttttg ggaaaatatg yctttgtctt ctatatatga a

41

<210> 1210

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at

<400> 1210

tacttacagg ttgatttttag nacacagcag actctgtctt c

41

<210> 1211

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1211

tacttacagg ttgatttttag acacagcaga ctctgtcttc

40

<210> 1212

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1212

ttacaccaga ccccatactt kaacaccata tgtcacaaaa t

41

<210> 1213

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1213

gtaggcagcc tattcttgat katattcatc aatcatacag a

41

&lt;210&gt; 1214

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1214

acagaaaaag tattgtagac rgaaataaca attcattgag a

41

&lt;210&gt; 1215

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1215

aaggagcat gaatagtcca saagtaactg agaactgatt a

41

&lt;210&gt; 1216

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1216

caaaagaaag ggagtaaaga stcaacaatc agttagcttt t

41

&lt;210&gt; 1217

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1217

attttatttg gggctttcta ygtctctctc tcctaagcct a

41

<210> 1218

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1218

tgtcatactt aactcttaaa satccagagt aaatgatgga g

41

<210> 1219

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1219

taccagttga cccagcaacc ytcttataga gtagtttaaa t

41

<210> 1220

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1220

aatgatccac aaaattacta stcattgttt tctttcaatg a

41

&lt;210&gt; 1221

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1221

cacacacaca cacacacaca scaaatggaa gcagccagac a

41

&lt;210&gt; 1222

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1222

gaaaaagaaa atctggctta yatcatgttg aaaacaaaag t

41

&lt;210&gt; 1223

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1223

tccaattcca ccttctccta sagcatatcc tgcagttacc t

41

&lt;210&gt; 1224

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1224

gtcttggttc atctcttgag wtaaattaga tctgggaact t

41

<210> 1225

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1225

tatgtcactc tcaagaactc ytataagacc aagagtcac t

41

<210> 1226

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1226

ctgaaaatga aactgaacc rttaatcata ctgatatgta c

41

<210> 1227

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1227

gtggagcaca gcattttagg rcttgatatt tgcttattat a

41

<210> 1228

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1228

ggtgacctgg tgccatcccc raccaggaga cgcagggtgcc c

41

<210> 1229

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1229

ctgaggcacg agggacaaga kgtcgtcggg gagtgaaagc a

41

<210> 1230

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1230

ccactcttca aaaggaggta yatgtgacag cagctggaaa t

41

<210> 1231

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 1231

gaatccacca gggccatggg rctggcctct gattgggcac a

41

&lt;210&gt; 1232

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1232

gcctgggcta ggtgtagggg kcctgagttc cgggctttgc t

41

&lt;210&gt; 1233

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1233

cttccctgtg ttcacactaa ycttttcctt ctttgaaatt g

41

&lt;210&gt; 1234

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1234

atagccagga gaagccttga racccaggtt gtttggtcag t

41

&lt;210&gt; 1235

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1235

tccctgctag gaactgttta yataatgaaa ggaggggacc t

41

<210> 1236

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1236

ctggccatcc tgctacagca wctggagttc agcgtgccgc c

41

<210> 1237

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1237

cggctgcgct tctccatcaa ytgaagaaga caccaccatt c

41

<210> 1238

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1238

tgtatcctgt gaagcatcac rgttatcctt ctctgcacat g

41

<210> 1239

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1239

tgacagcact taccaaccta sttcctctga tttttgagtc a

41

<210> 1240

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1240

gggggaagcc acccccgccc ragcgctcc ggcttcctt a

41

<210> 1241

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1241

ttccggaag caagctcaag ycgcgagag ggaagggagg t

41

<210> 1242

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1242

ctggggacac cgtgcggcct ygattggagg tggctgtgat g

41

<210> 1243

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1243

tgcccgagc gttgtcccca rattgcagga accgttacgc g

41

<210> 1244

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1244

tgagtgtcac gccttctcct ytctgtcccc agcatgggca c

41

<210> 1245

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1245

agcttctggg agattttttt ngagtcaaag acttaaaggg c

41

<210> 1246

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1246

agcttctggg agattttttt gagtcaaaga cttaaagggc

40

<210> 1247

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1247

agtatagtgg ggttccatga kttatcatga attttaaagt a

41

<210> 1248

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1248

tttcttttttc tttttttttt naaaatttat tcctatttcc t

41

<210> 1249

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1249

ttctttttct tttttttttt naaaatttat tcctatttcc t

41

<210> 1250

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1250

ttctttttct tttttttttt aaaatttatt cctatttcct

40

<210> 1251

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1251

tttttctttt tttttttaaa ntttattcct atttccttac a

41

<210> 1252

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tgt or deletion

<400> 1252

attgtgtgag actcagaggt nccgtgttag tctttgggat t

41

<210> 1253

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1253

tcatgaagcc tgtaaggcac rtctctgccc caagcagctt c

41

<210> 1254

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1254

aaggcacatc tctgccccaa rcagcttcta atccagttct t 41

<210> 1255

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1255

gagttctctg aaggagctaa yaccagtttag tgttttgaag a 41

<210> 1256

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1256

agtgggcagg ggagactaac ygggtgtgtg aggggtgggc t 41

<210> 1257

<211> 41

<212> DNA

<213> Homo sapiens



<400> 1257

gatttttctt aaagaaagaa rgaaagaaac atacaacata c

41

<210> 1258

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1258

gcattcttgct gtccacaggc mggggcacct ccaggattca g

41

<210> 1259

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1259

ggccggggca cctccaggat ycagaagatg actccagtag g

41

<210> 1260

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1260

ccgtgggttt ttttttttt ncttcatttc tttggttgct g

41

<210> 1261

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1261

atgttaggag ggtattttta yatccctcca gttaacaaat a

41

<210> 1262

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1262

ctggattgca acattttaat yccaggtgtc aggtttccaa c

41

<210> 1263

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1263

gaatcaccag tgcgggaggt rtaacagtga acccaagaca c

41

<210> 1264

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1264

ctgtagaaca caaggatatt yggaggcagt ttgtacatgc c

41

<210> 1265

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1265

ccttcccaca gagtcccgag wtcatgtggc agcatgccag a

41

<210> 1266

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1266

aaagatttgc taagagattc rcagaggcaa cctgaggccc t

41

<210> 1267

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1267

atgtttatat tttatattaa yattaatgta aataaaaatt t

41

<210> 1268

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1268

attaaagtac actattcagg yatatcatgt aggtttactt t

41

<210> 1269

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1269

gctgtggcct ttgacaatgt rttacttaga aatgttggtt g

41

<210> 1270

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1270

tggcctttga caatgtgtta yttagaaatg ttgtttgttt t

41

<210> 1271

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1271

ttccagcaga gacaccaaca rgtaaaaaca cccagctac a

41

<210> 1272

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1272

ttttttccc tcatatttgc ygtctgtgct acaatatgtg a

41

<210> 1273

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1273

ctctggtagc cttttaatta rtttaattcat tcatttactt a

41

<210> 1274

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1274

tggtagcctt ttaattaatt mattcattca ttacttaca t

41

<210> 1275

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1275

aggttacaga aagaatggtg mttggccaaa aaatgatatg g

41

<210> 1276

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1276

taatgagagt taagtaggag mattttcttt tatttttgtg c

41

<210> 1277

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1277

gagcattttc ttttattttt rtgcaggaga aatataaaca a

41

<210> 1278

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1278

aggtgccttt tctattgtcc yatgcagact taggtgatcc t

41

&lt;210&gt; 1279

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1279

gtctgacaca gaaggatcaa wggcaaaatg tgcaagacaa a

41

&lt;210&gt; 1280

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1280

taggaggttc actgggaaac ytgaattcca ctgagtcatg a

41

&lt;210&gt; 1281

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1281

tataaatata gtgttaaatt ygtctctcgt attttaaggt a

41

&lt;210&gt; 1282

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1282

tgtgtcagta aaatattata ytaagtaggt gaatgagatc a

41

<210> 1283

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1283

tatattaagt aggtgaatga katcatgtaa ttgtgagact a

41

<210> 1284

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1284

ttagagattc agacgaattc rtataatcitt cgatggtgta t

41

<210> 1285

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1285

gttaaaatgt ggataaatac yacaatttgc aaaatatttg g

41



<210> 1286

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1286

atttagaagt tctatacatc ytttatagta tattacacac t

41

<210> 1287

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1287

tatagtatat tacacacttc raaaacacaa aattatTTTT t

41

<210> 1288

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1288

caagtcacatc cttcaaattt rttaattgga gtccctgct c

41

<210> 1289

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1289

ttagaaattg gtctttctta raatggtcta gttaagttcc a

41

&lt;210&gt; 1290

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1290

cacgatctgt cctccgattc ytggttaactc tagactttct g

41

&lt;210&gt; 1291

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1291

gtaaattccc ggcaaaaacc rgcagcgccct tgcaagccca c

41

&lt;210&gt; 1292

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1292

agcatggcgc ggggaggagg kgtgggaggg tcgggaggga c

41

&lt;210&gt; 1293

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1293

tgaataattt aaaggggccg ygcctgcgga gccgggcgga a

41

<210> 1294

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1294

tcttgccata tacttagtgg rggggtctac atcaggggtt t

41

<210> 1295

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1295

agcctccagc ctctcttctc ygggggttat ctcaggcatc t

41

<210> 1296

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1296

ggtgctggct ctgggatccc ygtgcgtcat gtagtctacc t

41

<210> 1297

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1297

tggcctcaag caatcctccc rcctcggcct cccaaagtgc t

41

<210> 1298

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1298

gaatgtttat gtagaacaga ragactgtat ctgcggtctt c

41

<210> 1299

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1299

tatctggtac cgaggaagct stggcctcgt ccccaagggc c

41

<210> 1300

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1300

atccaggctcc accgcctgcc ygtcttgatt gttttaatct g

41

<210> 1301

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1301

agccccgcgt cgggtaaggc ytgggaccct gcccggtggt g

41

<210> 1302

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1302

gccaccgcgc cctgcgcctt yatatttttc ttaacccttc c

41

<210> 1303

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1303

agagccggcc ggcccagagc rtgctgggag atgtagtccg g

41

<210> 1304

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1304

gaagaaatcg tgcccctgag rgtttcaaac cctaagtagg a

41

<210> 1305

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1305

ttcaaaccct aagtaggacc saggtgcaga gcattctggg g

41

<210> 1306

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1306

ccactgtact ccagccggga ygacagagct agaacctgtt t

41

<210> 1307

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1307

tggaataag tctgtggatt kttgttagg actctgggca c

41

<210> 1308

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1308

acagctggtc taggctgtta stggagaaac tgggaagcaa c

41

<210> 1309

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1309

gaagcaacag ctgggtcaaa ngtagctttt cttttcttgg c

41

<210> 1310

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1310

cactgcaacc tctgcctccc rggttcaagt gattctcctg c

41

&lt;210&gt; 1311

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1311

ctgcctcgtt ttatgttcag ktccccatt agacagagga a

41

&lt;210&gt; 1312

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1312

agtcgtggag cacaggagca rgaatttcag ataaggagga a

41

&lt;210&gt; 1313

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1313

tggggagggt ggtgggtggg sctggagcct caaattcttt c

41

&lt;210&gt; 1314

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 1314

caaattcttt cagacctgag ytcaagttct cggcttccaa c

41

<210> 1315

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1315

cagacctgag ttcaagttct yggcttccaa ccacggagcc t

41

<210> 1316

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1316

gtggggcggc tggtagacctc mgccgtccgt attccgcagc t

41

<210> 1317

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1317

gcctgcagca accgctgacg ycacgtgggg ttgggggggat g

41

<210> 1318

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1318

cgtcccaggt cagcgagccc rtcgggccgg ctgggcctcc g

41

<210> 1319

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1319

acctcccgca ccacacacac rcacacgcgt gggcacacac a

41

<210> 1320

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1320

aaaaatacaa aaaattaacc rggctggtgg ggtgtgcctg t

41

<210> 1321

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1321

ttaaccaggc tgggtggggtg ygcctgtaat cccagctact c

41

&lt;210&gt; 1322

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1322

aaatcacttg aacctgggag ktggaggttg cagtgagctg a

41

&lt;210&gt; 1323

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1323

gtgtgcacac cagctatata ygcaaatgct ttctctcagg g

41

&lt;210&gt; 1324

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1324

gcacaccagc tatatatgca matgctttct ctcaggggca g

41

&lt;210&gt; 1325

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1325

tgaaataggg catttgccaa ygc atgccag tctgtcccgt t

41

<210> 1326

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1326

gcacacacgt agataggatg yggcacctct gaccgagtta a

41

<210> 1327

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1327

tggtgcctgc ataggtggtc yggctaagct ttgctactta a

41

<210> 1328

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1328

ggtgcctgca taggtggtct rgctaagctt tgctacttaa a

41

<210> 1329

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1329

gtctgtcaag ggcaggacag rggatgtgta ggcgagtgtg c

41

<210> 1330

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1330

aatggcttcc tgtcgttttc rgactgggga cccaccttct g

41

<210> 1331

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1331

atcttctgat gactgggctt yggcgcagta actggtgttt g

41

<210> 1332

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1332

gatactgttg gtgggagaaa ygacagagag tgtaaaacag t

41

<210> 1333

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1333

gtttctcaac aggtgcattc ktgacgttcc agactggata a

41

<210> 1334

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1334

cagaaggcgt ggaggcctgc ygcgcctccc tctgttgctg c

41

<210> 1335

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1335

attgcttgaa cccaggaggc rgaggttgca gtgagccaag g

41

<210> 1336

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1336

ggaactgctt gggtcacagc ytcgttttgt tcccagtatc c

41

<210> 1337

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1337

aagagaaata ggtcattagg wtgaatttgt taggcaagag a

41

<210> 1338

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1338

cacagcgtgg agacggggca rggagggggg ttattaggat t

41

<210> 1339

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1339

catattaata gaagagtctt ygttccagac gcagtccagg a

41

&lt;210&gt; 1340

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1340

atcaaagtgg ctttgatttt kgcataagaa tggtagactct t

41

&lt;210&gt; 1341

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1341

gataagttct agaactggca mctaatgata tggactagaa g

41

&lt;210&gt; 1342

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1342

gtcatatccc accccc aaat matgcagcca aggttactga a

41

&lt;210&gt; 1343

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 1343

agttatgaaa ccgatttttc ygggactggg tgttctagtc t

41

<210> 1344

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1344

aggtttccag atgtgttccc yaggcattcc tggtagtagg a

41

<210> 1345

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1345

cttattcttt ggtagttgg ytttctacca cctcttagct t

41

<210> 1346

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1346

gttaaggata tgtgaactca raatttttat acacagtgc a

41

<210> 1347

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1347

ggactagtgg aagaattaga sctttcctga ataaatagat c

41

<210> 1348

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1348

aaaactggca ggagaatttc rctggagctg catgcaggac t

41

<210> 1349

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1349

gggtattgga aagttcttgc rgctgctgga ggctgcggtg t

41

<210> 1350

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1350

ggtataaggc aagatttttt waaaaaatta attgcttaat c

41

&lt;210&gt; 1351

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1351

ggactcttac cagcttagtt kcctgggtttt ctaatctaaa a

41

&lt;210&gt; 1352

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1352

tggccaggaa ggagtacacc rttggagaaa cagtgaacct g

41

&lt;210&gt; 1353

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1353

aactttttta gtcttaagac wggaaggcct gtgtcctagg c

41

&lt;210&gt; 1354

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1354

ccctctcacc gcccctgcc rcttttcctc ctttgtacca t

41

<210> 1355

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1355

agtgtgcga ttacaagcct sagccacctg cacagcctct g

41

<210> 1356

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1356

taccataatt tatgtgtcct rtatgacatg aatttcattg g

41

<210> 1357

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1357

gttaaggata tgtgaactca raatttttat acacagtgc a

41

&lt;210&gt; 1358

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1358

ttaatgaggt taagcacatg ktcatatgtt taaaagcctt t

41

&lt;210&gt; 1359

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1359

catgagtttt ctgagcccca stttatctaa ctataaaatg a

41

&lt;210&gt; 1360

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1360

gtgcagggtc cccctgatgc yatagccagt tcctcttttag a

41

&lt;210&gt; 1361

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1361

atgagctgaa agcaaaggtt ytcagcccct tcccctgata a 41

<210> 1362

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1362

ttccaggtga cacatttagt rcctaatttg ggaaatgtta a 41

<210> 1363

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1363

tgттаатсга гтсгаатсс мтгагаа ааггаггггт с 41

<210> 1364

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1364

catcctgatg cacagttatt yaaatttaag ctccattgt t 41

<210> 1365

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1365

atgtatggag tatatatgga rtaaagtatt ccatgctgta t

41

<210> 1366

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1366

caagcaatag gattgttttc ratattcttc atcatccttg c

41

<210> 1367

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1367

tatactgagg atctttctga yagggaggaa ttattatgtc c

41

<210> 1368

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1368

tgagccaact actgtactag ractggggc actcaatgaa t

41

&lt;210&gt; 1369

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1369

atgggccaga cccaactcac kgatttttta gtgtatctga g

41

&lt;210&gt; 1370

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1370

gggtccctaa agtttccttt sctctaactc aaaggaccta a

41

&lt;210&gt; 1371

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1371

cagattggcc cagcaaaggc magatccagt ttaacaacta c

41

&lt;210&gt; 1372

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 1372

aacaactacc aagtgcggtg ycgacctgag ctggatctgg t

41

<210> 1373

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1373

agagggatca cttgtgacat yggtagcatg gagaaggtag g

41

<210> 1374

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1374

ttccctagga tggacacgtc rtttccagaa ctttgaaatg t

41

<210> 1375

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1375

gtgttaggtg atgcctggca yagaattttc atccaggtct g

41

<210> 1376

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1376

gccaaaattt tacatcacgc raatgaaaac gaacaagggt a

41

<210> 1377

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1377

ctggctccat cttttaccca yggacgtatt ccttactctt c

41

<210> 1378

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1378

gtgaattttt attataagct ygttctcctt aaaactttat c

41

<210> 1379

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1379

acatccttct cccctcagtc ytcggttagt ggcagtattc t

41

&lt;210&gt; 1380

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1380

tggcagtaga gcagggtgag raggattatt ctgcagagga a

41

&lt;210&gt; 1381

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1381

gctttggagc catagtcatg yactcaaaat ttattttatc t

41

&lt;210&gt; 1382

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1382

tactctttac ctgtgaagag yagaacatga agaaatctac t

41

&lt;210&gt; 1383

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1383

cttgctggag gaagggtgct mgaaaatata ccaaattcaa g

41

<210> 1384

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1384

gaaataatat tcaagttctg maataatatc atgacctata g

41

<210> 1385

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1385

gatatgaatc agaattcatc ygtgtctcaa gaaaaggcca t

41

<210> 1386

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1386

tgctcaaga aaaggtcatg ygataaatta agttctgcta g

41

&lt;210&gt; 1387

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1387

aattaattta tcatcatctg rtcaccattt cacacaactc a

41

&lt;210&gt; 1388

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1388

cataagttga aatgtcccca rtgattcagc tgatgcgcgt t

41

&lt;210&gt; 1389

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents g or deletion

&lt;400&gt; 1389

gctctctggc ttcgacgggg nactagaggt tagtctcacc t

41

&lt;210&gt; 1390

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1390

attaactatt caaaatactt yggaaatttg acatctcctt a

41

&lt;210&gt; 1391

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1391

ttagctctct tactgcttca yagtggaaga atcaaatact t

41

&lt;210&gt; 1392

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1392

aaacactctg aatattaaac ygctcctgga accacagctc a

41

&lt;210&gt; 1393

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1393

agttgtcctt gccctttgcc yttctagagg tgcaaaaaat a 41

<210> 1394

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1394

tgcaggaagt taggaaacta ytataaatcg gaagaaggga a 41

<210> 1395

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1395

caaaccaacc tgatttataa rcataagaac attctactac t 41

<210> 1396

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1396

gtttggtggg ctagggctac rgtaggagtg ggaacaagag a 41

<210> 1397

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1397

caacagtaaa gttacaatct raaaggaatg ctctctgttt a

41

<210> 1398

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1398

tttccctgag gaatggttat yctctgtgtt ccttgagtcc a

41

<210> 1399

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1399

ccacatcagg ttttcccag rcaccttggg acagtttgaa a

41

<210> 1400

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 1400

aaaaccctaa ccattgacac rtgtgaatgt tttcctgggg a

41

&lt;210&gt; 1401

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1401

cgtgcctcct ttctactggg rtttgtctta attggccatt t

41

&lt;210&gt; 1402

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1402

ctgacctgtt ttggctgac rggtttttagt tcctcccctc a

41

&lt;210&gt; 1403

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1403

tcttggtatt aaaagatcca ragagatagg aatatgtaat t

41

&lt;210&gt; 1404

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1404

tgcaacttagg aaaaaaaciaa yatggaaatg tgtaaaatat a

41

<210> 1405

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1405

tgtaaaatat actttttttt waaaaaaaaag gacacattta t

41

<210> 1406

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1406

aggacacatt tattcagcat yatgatcaga ctattacatt t

41

<210> 1407

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1407

caccttggtt tcatggtttg rcaaagtact ggcctgtacc a

41

<210> 1408

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1408

caccaacaaa tatctttttc rcagttgggt gggcatctgg t

41

<210> 1409

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1409

agactctgac ttagacatga yggcagggga aagagagact t

41

<210> 1410

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1410

taaaatacag atgtgttgta mtaagttctg caagcctttg g

41

<210> 1411

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1411

ggggagggtgt ccaggcacga ncatggagag ctggacttga t

41

<210> 1412

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1412

ggagggtgtcc aggcacgaac wtggagagct ggacttgata c

41

<210> 1413

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1413

tgcagccttg atcttctggg ytcaagcgat cctcctgcct c

41

<210> 1414

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1414

cttggataaa gtctgagagc staaatatgg tctccaagtg g

41

<210> 1415

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1415

gtccttcaat tttgtggtga rcttaaaaac aggactctaa a

41

<210> 1416

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1416

tattaagtgg tgtgttaaag rttgtgctat aatgaattgt a

41

<210> 1417

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaag

&lt;400&gt; 1417

aagggctgga agagtgaaag ngaggctatt tgctcccaga c

41

&lt;210&gt; 1418

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1418

aagggctgga agagtgaaag gaggctatatt gctcccagac

40

&lt;210&gt; 1419

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1419

gcagcctctc tggcctatag kttgatttat aaggggctgg t

41

&lt;210&gt; 1420

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1420

ttgatttata aggggctggt ytcccagaag tgaagagaaa t

41

&lt;210&gt; 1421

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1421

tctcctttgg caggtagggtg rtgggcagct ggggccattt g

41

<210> 1422

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1422

cttcacccgt atgccaggac ytggggatgc ttttctcttg t

41

<210> 1423

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1423

gcagcagtgg tgctccctcc rtgggcagcc ccgtcaggtc c

41

<210> 1424

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gtg or deletion

<400> 1424

atggtgccca ggtggatgtg ntccatctca ttcctgtctt t

41

<210> 1425

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1425

agctgcagga ctggaattcc ygtggggatc gcacagtgt g

41

<210> 1426

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gg or tgggtggggtgga

<400> 1426

aggtggggtg ggggtggggtg nggctgtctg tgtccaggaa a

41

<210> 1427



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1427

acggggcagg aggttctggg magaggacac ctggagcgct g

41

<210> 1428

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1428

agttaactcc cttgctgaca rgcgtgcttc ttgataggcc a

41

<210> 1429

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at or deletion

<400> 1429

gataggccaa aaccgtaact nctttccaaa acatagaccg c

41

<210> 1430

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1430

agttctccaa taaggcagat raagttaaga taaaatttgt a

41

<210> 1431

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1431

aattaatatc atttattgct rtattgttgt cagtgttattc t

41

<210> 1432

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1432

tgcttctttt caagccagcc rgctttaaaa aaaagtttagc t

41

<210> 1433

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1433

caggttttca gggctcatgt rgacctgaag aaaaatgaga g

41

<210> 1434

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1434

attctacttt ctcaacttct yttattacat tatctcatca t

41

<210> 1435

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1435

ccactctgaa acttccccct rcttttttttc cttgtcagca g

41

<210> 1436

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 1436

ttctctaagt aaaaaaaaaa ncatattaat tgaccatagt t

41

&lt;210&gt; 1437

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1437

ttctctaagt aaaaaaaaaa catattaatt gaccatagtt

40

&lt;210&gt; 1438

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1438

aaaacaattt gtgtgtgtgc rtgtgcttca aggttaatgt t

41

&lt;210&gt; 1439

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1439

taaccactct gccctcagta ygaaacacag tgccgaaccc a

41

&lt;210&gt; 1440

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1440

atcctgtgag gtggggaagc rtatggctag cataaatata a 41

<210> 1441

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1441

tgttacctta ctgcctcatt stcattcttc ccacctgcta t 41

<210> 1442

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1442

ctccttccta accttagcaa sagtctggag atttacttat c 41

<210> 1443

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1443

ggcttaggcc taagggtga ygttggggcc agtaccctg a 41

<210> 1444

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1444

agctatgaaa acaagaccct rtccttctag aggtagcaaa a

41

<210> 1445

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1445

aaacggaaaa acctactcag mgcgggcat tgaccgccc g

41

<210> 1446

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1446

tgctggctcct ggggtagcc rtcgtggtga ggctttcccc a

41

<210> 1447

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1447

ccccactta aaacatttgt sccctctgtc tccccattcc a

41

&lt;210&gt; 1448

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1448

cctgtccgg tactgccagc ygcagggtgc agagttgggg t

41

&lt;210&gt; 1449

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1449

agttcatagc attctcgctc rgccccctca ggcctgctgc t

41

&lt;210&gt; 1450

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1450

ggcaatgtgc ggactgtgcg wgccttcgcc atggagcaac g

41

&lt;210&gt; 1451

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1451

tttccgcagc tgcattggaca ycctcgcgtg ccccgtttct g

41

<210> 1452

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1452

cctcttggag gtccttctag ygctgcctat gtggagattc t

41

<210> 1453

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1453

ttcctgcctg gtgcctcccc nggctgcctt tagcaagtgc t

41

<210> 1454

<211> 41



<212> DNA

<213> Homo sapiens

<400> 1454

tcctgcctgg tgcctcccc rgctgccttt agcaagtgct g

41

<210> 1455

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1455

cagggccgag cagggagtcc rtgggtcagc tgggctccct t

41

<210> 1456

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gg

<400> 1456

tcctccactg ccacaagggg nccttctttc ctgggacaat c

41

<210> 1457

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1457

tcctccactg ccacaagggg ctttctttcc tgggacaatc

40

<210> 1458

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1458

tgctctcggg agaccctggc ygtcttcaca tgcctcagc t

41

<210> 1459

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1459

atccaggtct agagaagcct rtagtggagg tgctgagctg c

41

<210> 1460

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1460

acagtttgtt caggaagac sagaaccaca gccaaagggg a

41

<210> 1461

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1461

accacagcca aaggggacag wgtcgttgtg tggggacagg g

41

<210> 1462

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1462

gttggagcct tgggctctgt ragggggaca gagggaatca t

41

<210> 1463

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1463

cctatcccct ggctcacccc rggaccacaca gtccccatct t

41

<210> 1464

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1464

ccctctttca ggggtgtgat rcagtgcatt gatggagcag c

41

<210> 1465

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gtc or deletion

<400> 1465

tagaccgcag gagccgcgcc nttcctaacc tcgcctcggc c

41

<210> 1466

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1466

agggtgccag gccaggcacg sgttgggggg cgtctgggca c

41

<210> 1467

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1467

tgggcccagc acgtggggcc yggaactacc tcaaaggctt c

41

&lt;210&gt; 1468

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1468

accagctcag cctgcccagc rtgcacacgg caccaagctg g

41

&lt;210&gt; 1469

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1469

agatccaagg gatccagagg ytggaatgtg accctccgtg c

41

&lt;210&gt; 1470

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1470

gggaagccag atgcccacaa rgctctgtga cttcacttcc a

41

&lt;210&gt; 1471

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1471

gcccaagtgtc aagatcgagc raggggaggg cctgacgagg g

41

<210> 1472

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1472

cagaatccag atgcccgtaa ygttggttaag aagcctgcac a

41

<210> 1473

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1473

ggccaggcgg ggaggggtac yggccagacc ggtgggcaaa a

41

<210> 1474

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1474

agagtcacag ggttggggtg mccccgggaa ggtggcatct a

41

&lt;210&gt; 1475

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1475

taccagccct gtgctttcag rgaccatgtg acctgtcaac t

41

&lt;210&gt; 1476

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1476

cccgaggtgc ctggcttcac rgcaggattg cgtcctgca g

41

&lt;210&gt; 1477

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1477

aaagtggccc cgtggcttgt yccctgaagc cctaaagcac c

41

&lt;210&gt; 1478

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1478

ccacagacaa gccgggtagc mcacctcgca gctcaacaca c

41

<210> 1479

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1479

cctgggttttg ggccctgttc rgtgggacgt acatttcact c

41

<210> 1480

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1480

ggtaccagga gtcgggtatc rgtgggacag gaacgcgtgt c

41

<210> 1481

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1481

gggccccagg agctctccca kactatcagc ctcttgggct g

41



<210> 1482

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1482

cccaggcctg cagcactgaa rgacgacctg ccatgtccca t

41

<210> 1483

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1483

tcgcgtctgc gcgctccgcc yggctctgccg gcgtgagaaa g

41

<210> 1484

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1484

acaaggggcg gttgcgcccc kcagcggccg gactcccgga g

41

<210> 1485

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1485

ccacttcct cgcgcgggcc kctccttctc cacacgcggg g

41

<210> 1486

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1486

actcgtttgc agattttaca yttgttttct tgttgacaca c

41

<210> 1487

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1487

gcgtttatac tttttttttt naaccaaaaa cacattattt g

41

<210> 1488

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1488

agggccgggg cccaggcttc ygtaggcatc agtatgatgg t

41

&lt;210&gt; 1489

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1489

caaattcaca actgtgcctt scacagaatg gggtggaaaa c

41

&lt;210&gt; 1490

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1490

ccccactcca cttgggtgag rgcaggtgga tggatgatggg t

41

&lt;210&gt; 1491

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1491

tacctcaggg cactcagaca scctcaccaa tcagaggctc a

41

&lt;210&gt; 1492

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1492

tccttttcct gttttttgtt kttttttttt tcttgagtg g

41

<210> 1493

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1493

cattggtttt tagtgtattc wgtgttgtgc atccatcatc a

41

<210> 1494

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tt

<400> 1494

tgtggttttag agctttctct ngagacattt ttgctaaggt t

41

<210> 1495

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1495

tgtggtttag agctttctct gagacatttt tgctaagggt

40

<210> 1496

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1496

agctgaagtg aattaagcac ratcaactca gtactcacac t

41

<210> 1497

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 12 repeats of t

<400> 1497

aggggggaaag tttaaaggta ngctcttgta tgtttttaag t

41

<210> 1498

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1498

agagggtttc ccaagcacac yctgtgtttg gggttattgc t

41

<210> 1499

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1499

aaatatagat gcaaaaaaaaa ntgagctgtg gatgcatgtt t

41

<210> 1500

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1500

aatttcagtt tttaggtcac ycaagccagt gggagtcaca t

41

<210> 1501

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 10 to 13 repeats of a

<400> 1501

aaagacgttt taagggttt ngaaagaaaa gaaaactgta g

41

<210> 1502

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1502

ggtttcccaa catctcatct rataaaaaaa ataatttgcc a

41

<210> 1503

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1503

aaagagaata ggtagtgga ytagtattcc tgtgcttaat g

41

<210> 1504

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ct or deletion

<400> 1504

aagagatggg ctctagcccc ngtttgattt ggggcactta c

41

<210> 1505

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1505

gtttggctac ttgtattaaa raagaaagaa gagataataa t

41

<210> 1506

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1506

cctgcatcta ttctgaccta yactggggaa aacagtatgt g

41

<210> 1507

<211> 41



<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cagatcttcttcagctaatttagaaatgt

<400> 1507

tat t t t g t a g t t c a a a a a g t n t g c t g t c c a t t t g a t a t t c a

41

<210> 1508

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1508

tat t t t g t a g t t c a a a a a g t t g c t g t c c a t t t g a t a t t c a

40

<210> 1509

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1509

a g c c a c a c g t t t c t t a t t g c r t g g g a a g t t t a a a a a t g g g

41

<210> 1510

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1510

agtgaacctg agattgagct rtactgaaat ctctagaaga g

41

<210> 1511

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1511

aaagggtggt ctttaaacc ytattgtttt ctcattcagg t

41

<210> 1512

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1512

tttctcatca gggtacaaga ygagaagaaa ggtgatggcg t

41

<210> 1513

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1513

acaatttata gtattttctca rtgccccaca cagtttatct a

41

<210> 1514

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1514

gtagatgagt agctaaaaac kaaagtcagc tcctgaaata a 41

<210> 1515

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1515

ggcacaatga cagatgtttt yattgactac gacgttgagt t 41

<210> 1516

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1516

gggaggtgac ccatgaattt yacttgagta tcatctccaa g 41

<210> 1517

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1517

agaagaggta acagtaagcc kcctgattta cagcacacat c

41

&lt;210&gt; 1518

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1518

atttgcaggt gtgtttgtag sgggcagttg agtagcttga a

41

&lt;210&gt; 1519

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1519

aaaggattca gcaggcatga rgaaagaaaa gctttgcaag a

41

&lt;210&gt; 1520

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1520

ccattggcta atagcaatga mctatgacat ggtctaactt a

41

&lt;210&gt; 1521

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1521

tcaatgatgt tacagtgaga mtctaattatt gtattaaacc c

41

<210> 1522

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1522

ctaattattgt attaaaccga wgccacatgt taaatgaatc t

41

<210> 1523

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1523

gtgtccaagt ttacggacta ygagctgaag gcctatgcca a

41

<210> 1524

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1524

caccttggtc tgtggcctcc rgaggaagta ctgtttcaag a

41

<210> 1525

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1525

taatcattcc aaaccacgga mtttatttca ttaagaacat g

41

<210> 1526

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1526

tcattccaaa ccacggactt watttcatta agaacatgat a

41

<210> 1527

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1527

tttacagatt ggaaaagcca ytgaagtatt gcaggtccag a

41

<210> 1528

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1528

agtgactgta attagtatca sttgtgcaca gagaaaaaat g 41

<210> 1529

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1529

tgcagaaggt tgttctttca ygaccttctt gagtttcaga a 41

<210> 1530

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1530

gaattcatta ataaaaataa wcacataatg gagcgtgaca t 41

<210> 1531

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1531

gggccactct ttggcttggc ratagactgt ggccaatgaa a 41

<210> 1532

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1532

gctatttggt aggaacatct rggcatgatac aggtagcctt c

41

<210> 1533

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1533

gagtaatatc cagtaaaaaa ntaaagtggt attttaaatc a

41

<210> 1534

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1534

tggttccagt aatagggaat rgaggtgtct ttctctgaaa g

41



<210> 1535

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1535

gataaatgac aaggcaatta saacaatcag gaagcacagg t

41

<210> 1536

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1536

caaggcaatt acaacaatca rgaagcacag gttcttccca a

41

<210> 1537

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1537

cctcatcctt gccaatgttt ycttttactg gtttttgatg g

41

<210> 1538

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1538

tctaaatgac ctcaacatgg ycattaaacc aggggaaatg a

41

<210> 1539

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1539

atggcagtat attgatcaaa yagaaagggtg tagcatacat t

41

<210> 1540

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 1540

ttattggcct ctatTTTTTC ntgccattg gtcaagtatg a

41

<210> 1541

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1541

ttattggcct ctattttttc tgccattgg tcaagtatga

40

<210> 1542

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1542

catacattcc tgggagaaac yaagaggtca tagaaggaaa a

41

<210> 1543

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1543

cacaattata cacatttctt ytcgtatgat tcccaagtca t

41

<210> 1544

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1544

tattgtgtca aaaacaattc rttgtatatc tccattctaa g

41

<210> 1545

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1545

cagcctttgc attatatttt ngctgtgttg tctaacagga g

41

<210> 1546

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1546

cagcctttgc attatatttt gctgtgttgt ctaacaggag

40

<210> 1547

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1547

gctgtgttgt ctaacaggag maaagagaca cggatttgct c

41

<210> 1548

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1548

tgagatagat atttaggacc rtgaccaatt tttattttgg t 41

<210> 1549

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1549

gtgaccaatt tttattttgg ytgaaaaatc ttatttgaag t 41

<210> 1550

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1550

tattgattag acaataaccc rtctggggaa gggatatttc t 41

<210> 1551

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1551

ccttttctaa tgtctgcaca rcctatttaa gaatattccc a 41

<210> 1552

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 12 repeats of t

<400> 1552

aaagtttagt gtttctatca ngctacttct gatggacttc t

41

<210> 1553

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1553

tttctctccc caattcatgg ktttttggtt agcttctcat c

41

<210> 1554

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1554

tccccaattc atgggttttt kgtttagcttc tcattcttctt g

41

<210> 1555

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1555

caattcatgg gtttttggtt nagcttctca tcttcttggg g

41

<210> 1556

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1556

caattcatgg gtttttggtt agcttctcat cttcttgggg

40

<210> 1557

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaaaaaagaaaa

<400> 1557

ttagaaaggg gacttctttt ntctgtgttt agtggttcctc t

41

<210> 1558

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaaaaaaaaaaa

<400> 1558

ttagaaaggg gacttctttt ntctgtgttt agtggttcctc t

41

<210> 1559

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaaaaaaaaa



&lt;400&gt; 1559

ttagaaaggg gacttctttt ntctgtgttt agtggttcctc t

41

&lt;210&gt; 1560

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1560

tcagacttgg gttttcctat ytttcttctt gagaacaagt t

41

&lt;210&gt; 1561

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1561

tgttaaaata tctcattgta yatgctgacg gatttttctt g

41

&lt;210&gt; 1562

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1562

ccttaagtct cctcctatca wgcaccttgt tctcaccagc t

41

&lt;210&gt; 1563

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1563

ctctctcttc ctttctcagc nctactatatt cactgttggc t

41

<210> 1564

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1564

aatccccata tcctacctta kccatctcat ccatgaatct t

41

<210> 1565

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1565

atccccatat cctaccttag ycatctcatc catgaatctt g

41

<210> 1566

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1566

aatatgagtt ttctaggtat rtatctagca gtgtttcaag t

41

<210> 1567

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1567

atatgagttt tctaggtata yatctagcag tgtttcaagt c

41

<210> 1568

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1568

ctctgaaagt tagtgataca ycttatttgt gtttgaatca a

41

<210> 1569

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1569

atgtatgaga tcaagtcagg rtcaaattatt agacacccat a

41

<210> 1570

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1570

ggaccatcct gtggggcaat sgttccagaa aatgctggta t

41

<210> 1571

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1571

ctcaccggta taaatacaac ygtagcaaag gttttctttt t

41

<210> 1572

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 1572

tgcgtattcc ctcagttcag ntttttattc aagccacagc a

41

<210> 1573

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1573

tgcgtattcc ctcagttcag tttttattca agccacagca

40

<210> 1574

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1574

tggctaagtt aaaaaaaaaa ngagattcaa ctataattgc t

41

<210> 1575

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1575

caagattcaa tactgcccc naggggtgg gtgaacaggg c

41

<210> 1576

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1576

ctgttcaatt tcctctcgca yagtgattca ttccacattc c

41

<210> 1577

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1577

taattaatat cttgtccttg sggggtaa at gagggatggt a

41

<210> 1578

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1578

ttggggggta aatgagggat rgtagcataa acatttctca a

41

<210> 1579

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1579

aaacaccaca gaatgacata raactaaagg cggcaggaat c

41

<210> 1580

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1580

gaaacattca cagtgcctgt wtgagaagac agtgggttatt a

41

<210> 1581

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1581

gagcagctga aggcaggtca katgaaggct aggtggctgg a

41

<210> 1582

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1582

tccaaacct ctggatagta yatagaagta ggcaatccat t

41

&lt;210&gt; 1583

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1583

cctatgggtg gctcaggagc ygtgacacct tcccaggttc a

41

&lt;210&gt; 1584

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1584

gaggactttg cacatagtag rtgctcagct atattgttg c

41

&lt;210&gt; 1585

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1585

tttggaatct aaagactggg kcacgatgct agttgtgtga c

41

&lt;210&gt; 1586



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1586

ttttggggtg tggggagagg rcccatagta gggagacagc t 41

<210> 1587

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1587

acctaagggt gtccatcctg raggagagca gtcctagggg g 41

<210> 1588

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1588

ccctggtctc ccttaactca ygctggactg ttccctttgg t 41

<210> 1589

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1589

gcctgtgtac taagtctgcg sagctgaggt tcccacccta c

41

&lt;210&gt; 1590

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1590

atggtgtggt ggtaggacca yggctgggtca ccagaggctg t

41

&lt;210&gt; 1591

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1591

aaaggctttc acatctaaaa mgtgtctcct cattttctgt c

41

&lt;210&gt; 1592

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1592

ggattactta catatacacc rtgcggggga gtcaccacc t

41

&lt;210&gt; 1593

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1593

ctacccaccc tatcctgata ytccagcagg atggagggca g

41

<210> 1594

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1594

acaagtggga agagaaagct ygggagggta agtcctttga c

41

<210> 1595

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1595

cccagggagc cttagcttgc rgggagacag gacctgctca t

41

<210> 1596

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cct or deletion

<400> 1596

tgtctaagcc aatccctcct naccctctgc ttagcaggga c

41

<210> 1597

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1597

gcctgggttc ctccctctgg yccctctatg cccctccca t

41

<210> 1598

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tc

<400> 1598

agctcttaag catttcccc ntttcctcag caaatataac c

41

<210> 1599

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1599

agctcttaag catttcccc tttcctcagc aaatataacc

40

<210> 1600

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1600

tcctggtttc tctactgcat rgccctgtac cctgagcacc a

41

<210> 1601

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1601

tgtaccctga gcaccagcat ygttgtagag aggaggtccg c

41

<210> 1602

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1602

agaaagttgt caacaagagg ytgatatttt gtgtgctact

40

<210> 1603

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1603

tgtgggggtg aacagagctg rgacagctgg gagagccagt t 41

<210> 1604

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1604

cctttgcttg tggtcagaca mcctgccttt ctctctgggc t 41

<210> 1605

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1605

tcatatgtga gaatcccccc mccacggggt atccagacac a 41

<210> 1606

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1606

tccattcca agaatttct kgttgtgttg ctggcaggga t

41

<210> 1607

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1607

tgtgcatcaa ggagagcttc ygcctctacc cacctgtgcc c

41

<210> 1608

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1608

agtcggatgt ggtcatgaac kctctgtcac tggcagtggc c

41

<210> 1609

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1609

cctggtcacc aacctctgtt ytgccacag gaagcctgat c

41

<210> 1610

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1610

tgggctggga gatcagacag kgtgggggac tgggagggtc a

41

<210> 1611

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1611

ccagatggct caggctgtga mctccctggg caccaccctc c

41

<210> 1612

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1612

ctgggtgtgg aggagttggg rccccctgcc ttcaggaggc t

41

<210> 1613

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1613

tctgtgtctc acagtcacgt rgtgctccag gcattcaggg t

41



<210> 1614

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1614

aggagggagc tgtcttggga rgagagtggc agaggcaaat g

41

<210> 1615

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1615

cagtgcataa agcctctgat yctccttaga gaaggaggga c

41

<210> 1616

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ca or deletion

<400> 1616

ccaagcccct ggcaacctca ngtgattcag gctgggcctt t

41

<210> 1617

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1617

tttaatcagt ctctctctct ytttccatt ctaagtgtt a

41

<210> 1618

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1618

ccctgtcta cctccggcac ygcccgtccc tgccttcca c

41

<210> 1619

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1619

tccctggagg tccctgggcc sttctctggg cctcaggatc t

41

<210> 1620

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1620

ggatctcacc gtccatcccg yctgccctgc aggatgtccc a

41

&lt;210&gt; 1621

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1621

gcctgtcctg gctgggcctc kggccagtgg cagcatcccc t

41

&lt;210&gt; 1622

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1622

cgggtgtttcc cacaaccccc ragacggaac tggttttggg g

41

&lt;210&gt; 1623

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1623

ggcagagaag cagaggaggc rtcttactca ttcctctgct t

41

&lt;210&gt; 1624

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1624

gggccgtctc ccacttcac yacaccgaa ggcaccttc t

41

<210> 1625

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1625

gttctgactc agctggtggc yacctacccc caggcctta a

41

<210> 1626

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1626

agactccacc ccagcttggg wccctttcct tgaccctgt g

41

<210> 1627

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1627

cttcccatcg ttggacgggc raggctgagc agggggaatg g

41

<210> 1628

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1628

gctttagctt tctccatgtc rcttttccta tcaaggtggc c

41

<210> 1629

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1629

cgcttttcct atcaaggtgg mcttttcctc atgatgtcaa c

41

<210> 1630

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1630

gcttttccta tcaaggtggc sttttcctca tgatgtcaac g

41

<210> 1631

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1631

ccacctgtct aacctctggt sctgtttgct catgtctggg g 41

<210> 1632

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1632

ttgctcatgt ctggggcgtg wctctacaat ggctgttata t 41

<210> 1633

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1633

agcattctgt agaatgctga rctgtgctca ggggttgcgg a 41

<210> 1634

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1634

tgttgatcg tgtaggaggc rtgtcaaggc atgctggaac c 41

<210> 1635

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1635

gggtttgaac tgggtgggtgt kgctcagagct ctgtagggga c

41

<210> 1636

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1636

tgtgaaatgt cagatgaaag ratttgaact tgattaagag g

41

<210> 1637

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1637

ttccaaggga aattgccatt kaattctcct gtaactcagg t

41

<210> 1638

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 1638

ggggtggggg ttgggggggg nttactgcct tctctccagg a

41

<210> 1639

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1639

ggggtggggg ttgggggggg ttactgcctt ctctccagga

40

<210> 1640

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1640

ggtgctgtct accttcgggt rctgaagcag cccagagacc c

41

<210> 1641

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 1641

ctctcctggg tcctgtacca ycttgcaaag caccacagaat a

41

&lt;210&gt; 1642

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1642

gaacccatca caaccagct rtgtggccgg accctgaggt g

41

&lt;210&gt; 1643

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1643

tggtccaagt tccagctctc yttccctcac ctctcttgga g

41

&lt;210&gt; 1644

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1644

gcatggggat ccaggcacgg wtaccccctt ctctattcct c

41

&lt;210&gt; 1645

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1645

aagtgaagcc tagaattacc mtaagaccct gttccacagt c

41

<210> 1646

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1646

tgtgcgtgaa tgttcattggc rgccctattc acagtagcca a

41

<210> 1647

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1647

tagtgtactg tccttttata ygaaatttcc agaacaggcc a

41

<210> 1648

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1648

aaatgttccg gacctagata stgacgaagg tagcacgaca c

41

<210> 1649

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1649

cattaatgca cctctgcggg kctcttgggc agggggttgg g

41

<210> 1650

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1650

ttagggacat gtcctgagtc yacactgctc cccacaaacc t

41

<210> 1651

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1651

atccaggtct cacacagtgt yacttcctct cttggcttta g

41

<210> 1652

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1652

gagagcatga attgggtcct rtgtctttct ctccagattc a

41

&lt;210&gt; 1653

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1653

tgtgctgcct ccagcgggtc rcgtgcccat gtgcagacag g

41

&lt;210&gt; 1654

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1654

tcaagtctgc tgtacggcta ygtcttgtca cctgtatatt t

41

&lt;210&gt; 1655

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1655

aggtctggga cccagggtcc staagtgaac tgtctgagac a

41

&lt;210&gt; 1656

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1656

ttttgtggcc atgtcaggac wtgtgaacac atgtcagtgt c

41

<210> 1657

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1657

gggacagaca ggggtgccta rgtccttgtg aaggcattct g

41

<210> 1658

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1658

cctgacatag ctcttacgtg ycatgttagg cagtgtcatt g

41

<210> 1659

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1659

gaggagttgt tatacctgat ygttgaagga ctggtatgaa t

41

&lt;210&gt; 1660

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1660

ggtgcacgac ttcacagatg mcgtcatcca ggagcggcgc c

41

&lt;210&gt; 1661

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 1661

caggttgcca gtgatttttt nctcagaaag ttttcatcaa g

41

&lt;210&gt; 1662

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1662

gaccaagaag ggtctaggag wgcaagatgg gcttgggttt c

41

<210> 1663

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1663

cctcaatgca aggttgctgt mcaccctcgg gtgctgaagc a

41

<210> 1664

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1664

taccaccttg caaagcaccc rgaataccag gagcgctgtc g

41

<210> 1665

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1665

attgaatggt gagtgcaggt rctggtgccc tgttcctgag c

41

<210> 1666

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1666

ggtgccctgt tcctgagcct stctcattgg ctctgttccc c 41

<210> 1667

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1667

acccatcctg actgtctggg saaaggttat aggcccttag g 41

<210> 1668

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1668

tccctaattc ctacccttcc rtccagtcca gggatttata a 41

<210> 1669

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1669

tcattcatcc atccagtcct ygttcagcaa atactctcat a 41



<210> 1670

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1670

ctcctgggta ggaagagggg mccctcaggc agggagcatt g 41

<210> 1671

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1671

gggcccctca ggcagggagc mttgtcctga ctgccccctt c 41

<210> 1672

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1672

ccctgaggtg cgggcccccc stctctgttt ttgtccattc c 41

<210> 1673

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1673

gatcaggaga atccaacatc rcctccctcc aagacacaca c

41

&lt;210&gt; 1674

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1674

caagacacac accactgtct ytccaaggct ggcggactgg g

41

&lt;210&gt; 1675

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1675

cggcaaccct tcttggtctc kcctccagggt ctatgacccc t

41

&lt;210&gt; 1676

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1676

ggcaaccctt cttggtctcg yctccagggtc tatgaccct t

41

&lt;210&gt; 1677

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1677

gaaaaggccc acagagtagg rttgggttgg tcctagaagg a

41

<210> 1678

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1678

gagctcggct aggctcgcag katatgcaag cccacatggg g

41

<210> 1679

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1679

tgggtgtccc aggccaggtt mccggcttga tggggccagg a

41

<210> 1680

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1680

accatgttta cccatcattg ktcctggagc tccccagccc c

41

<210> 1681

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1681

gtggcagcat ccccgtaggct kctcctgctg gtggtcgggg c

41

<210> 1682

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1682

tacgcagcag gtattcacca ktatttccac attatccact g

41

<210> 1683

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1683

acacccccta ccctcacatc rtgacacagc tgggccagaa g

41

<210> 1684

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1684

tgccatctcc accctcccc rtgcaggggc atcttcttta t

41

&lt;210&gt; 1685

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1685

tgtggcactt ccacatatg ytcattgccc tcttgctcca g

41

&lt;210&gt; 1686

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1686

gccacagaga ccatggctca rgccccaaaa tgctgagtga c

41

&lt;210&gt; 1687

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1687

tatgcttggg tgttcagaa yatgttggac catgtaggag c

41

&lt;210&gt; 1688

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1688

ccggtcccct ttatgcccc maccctcctt tcttcttctg c

41

<210> 1689

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1689

aacatgggat ggagtggggg kgtgggtgtg gggagagcaa a

41

<210> 1690

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gccag

<400> 1690

ggccatgaca ccacggccag ntggcctctc ctgggtcttg t

41

<210> 1691

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1691

ggccatgaca ccacggccag tggcctctcc tgggtcttgt

40

<210> 1692

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1692

tttatttccc cactaacttg statgcaagc ttagtaaaat c

41

<210> 1693

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1693

cttggagaat taacggcaaa waccgcaatg acttttggac c

41

<210> 1694

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1694

ttctaagtac atttattctc ytgcttttag ctatgatcta g

41

&lt;210&gt; 1695

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1695

caggagggcc gtgtatgctc yctggataat tgttgggtgt t

41

&lt;210&gt; 1696

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1696

acgtgggtgct cccagacagc ygagtcattcc ccaaaggtgc c

41

&lt;210&gt; 1697

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1697

gggttggggg ttccgggcct sgttcctggc gcagtggggc c

41

&lt;210&gt; 1698

&lt;211&gt; 41

&lt;212&gt; DNA



<213> Homo sapiens

<400> 1698

tgcagtcaga ccttcacct yggccccag gaactgcatc g 41

<210> 1699

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1699

atcacctacc tttgcacaa ytaccttttc agatttccgg t 41

<210> 1700

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1700

ctgtgttggc ccctgtgcct sagtcccgcg gatggccagt a 41

<210> 1701

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1701

ggcccctgtg cctcagtc cc rcggatggcc agtagggggc g 41

<210> 1702

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1702

cattatttct tcagccaagt ytggtgccat tggagcagat g

41

<210> 1703

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1703

gttctgagag taactctgaa ytttgccctgt ttcacactgc t

41

<210> 1704

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1704

ccctttttat atccagaata sagcctaaac ttcttttctct g

41

<210> 1705

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1705

taagtatgct atactatatt ygatagatat actatactat a

41

&lt;210&gt; 1706

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1706

caatgtgatt aactgaatgc ygcaaatatg cactgtatat g

41

&lt;210&gt; 1707

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1707

caggcttttc agattggatc yccgtggcgt actatggatg c

41

&lt;210&gt; 1708

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1708

taggcccctt aacattgaac kattctcaaa tagtaatctg c

41

&lt;210&gt; 1709

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1709

tgagtctcct agaatgatat rttaggttta ttcaagcatt t

41

<210> 1710

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1710

agcagttaga tgagtcagag mataatatag ttgggggagg g

41

<210> 1711

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1711

gaagccaatt taacataaac maataccaag atcaggtttc a

41

<210> 1712

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1712

gcaagtatgg ttaatcaaag raccatttat tactcaaata t

41

<210> 1713

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1713

agatgacaag atttcttcta wttcaaaaat tccctagcac a

41

<210> 1714

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1714

ttctctaaaa cagatggatg mttatgtatt tgttaaattg g

41

<210> 1715

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1715

caggaagcca aacacaaagg yttggtgtca aacagtcaac t

41

<210> 1716

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1716

ttttgaatta aattcttata ytgtaacttt taaacttttt a

41

<210> 1717

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1717

gcaaaagaaa gtggtggaag matactgtac catgcaaaaa a

41

<210> 1718

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1718

aatggaattc tatgtttttt ngttgtgatt atttatctat c

41

<210> 1719

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1719

aatggaattc tatgtttttt gttgtgatta tttatctatc

40

&lt;210&gt; 1720

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1720

tgatctagaa tttagtttct rtaaataaat agaataccagt g

41

&lt;210&gt; 1721

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1721

aatcccactt attactctcc kgagagcttc aagtcctat a

41

&lt;210&gt; 1722

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1722

ttttaagtac aagttttggt yacagtgatt tcttcttgtc a

41

&lt;210&gt; 1723

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1723

aaattggtgg ctcacacctg ntggccccct tcctcctcct c

41

<210> 1724

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1724

gaaggtagcc ctggccacct stgttgtggc tccagccgat c

41

<210> 1725

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1725

cctgtgttgt ggctccagcc ratcctgtcg cccccccagt g

41

<210> 1726



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1726

gctttcttat gaccttggtc matttcccag ttgtcttggt g

41

<210> 1727

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1727

gagctgggct cagtttctcc ygggtcaggg tgtgatgtcg a

41

<210> 1728

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1728

ggatatgatt tctgcccctc ytctgctgtg ggtaaacagc t

41

<210> 1729

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tc or deletion

<400> 1729

tctgctgtgg gtaaacagct ntgtttcatg catttacttt t 41

<210> 1730

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1730

ccaataagaa tgtgcttgaa kgtttcatgc atttaatttg t 41

<210> 1731

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1731

ctgcctgtcc acaccacag yagcttgac atcatcccca c 41

<210> 1732

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1732

catgaatgac tctgggaaag ratcattctt agcaatggac t

41

<210> 1733

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1733

aaatggaatc caaacagcaa sagacctccc ctcaccggtc a

41

<210> 1734

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1734

actgagcttc tgccaccggc ygcctgccgg ccttcatgag a

41

<210> 1735

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1735

tccgtgtgga aggcaccttc scccagcctc agtggctagg a

41

<210> 1736

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1736

aacctcaggc gctgcctcag scagggagcc agcctggccc c

41

<210> 1737

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1737

aagcacgcac tgaacatgga rtgagtgagt gaacgaatga a

41

<210> 1738

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1738

tgcccaagaa cctggtgagc yggccgggct gaggcgggca g

41

<210> 1739

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1739

gccccttccg gtcacccttc yccgctcgag gcctcagggc c

41

<210> 1740

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ct or deletion

<400> 1740

attctcctct ctctctctct nggaccaggc tgggagcagt c

41

<210> 1741

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1741

cagaccctca tacgtgaccc ygctgcccc caggctctta g

41

<210> 1742

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1742

gtagacagag ctggactcca kccttgggtg ataagggatc c

41

<210> 1743

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1743

gccagggtca caagcagagg ygggaggagc caaggggttt g

41

<210> 1744

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1744

acctgcgtgg ccccgacta ygtcctatgc agccctgaga t

41

<210> 1745

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1745

tgcgggcatt gctgggctgc rgcgtgtggc cattgggggc c

41

<210> 1746

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1746

ccagggtccc agggctcagc rtgctaagat gaactcccat c

41

&lt;210&gt; 1747

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1747

atgaactccc atcccaccac yggctatcct gaaaggctgt a

41

&lt;210&gt; 1748

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1748

gaccaaggtc gggggattct ytgtgtccca caggccctga g

41

&lt;210&gt; 1749

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1749

cagccagggtg ggggtgcggc ygggctgggc agggtcagga g

41

&lt;210&gt; 1750

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 1750

caggagcccg cagtgggcag yacaagtggg ggcagcaggg g

41

<210> 1751

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1751

tcaggacttt gggatgggtgg wcctcttggc tctgtctctg c

41

<210> 1752

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1752

atcctgatgg ggctcaaggc rgcctcacgc acatcctgtt c

41

<210> 1753

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1753

gtgctgaccc agaccagcag ygggggcttc tgtgggaacg a

41



<210> 1754

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1754

tcccaggccc ccgagctgac mcttcttggt ggccgtggcc c

41

<210> 1755

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1755

aggctcccca agcctgggtc yctcttgccc ccacccactc t

41

<210> 1756

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1756

ccgcaatcgc cgcgccgcct raggatgctg ctggtggcca t

41

<210> 1757

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1757

cgctcccaac catgagagcc raggtgggag gcatgggaaa c

41

&lt;210&gt; 1758

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1758

ctcttccca tgctgctcat yctcctgggc cccatccact c

41

&lt;210&gt; 1759

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1759

caggggtgga cctgagtttc rtctcctgtc tctctggctg a

41

&lt;210&gt; 1760

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1760

cctggcaata cttacatctc rgtgatttgc tttctgtgca t

41

&lt;210&gt; 1761

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1761

caacaggact ctggaccaag sccctggcgt tgggtaacaa t

41

<210> 1762

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1762

agggaagggg atgtgtgccc rtggcccgtg ggtcaggggg c

41

<210> 1763

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1763

atggctgcag gggccatggg yacggggctt gctcaggaga g

41

<210> 1764

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1764

tctgtggaca gacaaggatt sggtcggggg caccagggt g

41

&lt;210&gt; 1765

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1765

tatgacaggt ccatcaggcc kcaccttcct gtgtgtctta t

41

&lt;210&gt; 1766

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1766

ctcagcatct gccccacag kgcttttgca cacgttggtt c

41

&lt;210&gt; 1767

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1767

aaagaaccct ccgagtcctt sgttttagtcc cagaagggag g

41

&lt;210&gt; 1768

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1768

gccttcaact gagggcgcac rcggccggcc gagttccggg c

41

<210> 1769

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1769

ggacctgcat aaggtgggcc rtggagagtg ggccccggca g

41

<210> 1770

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1770

gggccgtgga gagtgggccc sggcaggggc tggagcagcg t

41

<210> 1771

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 1771

ttcactcctg aacactcaca ngccaccctg tgatgcaggc t

41

<210> 1772

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1772

ttcactcctg aacactcaca gccaccctgt gatgcaggct

40

<210> 1773

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1773

gactacgctc tcaagaacct kcaggcctgg atgaaggatg a

41

<210> 1774

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1774

ctgcagcatc ctaacctcac ygtcgcgact caaggctgcc g

41

<210> 1775

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1775

aatcaccccc atggcacccc raccgtcact gagagggtgc t 41

<210> 1776

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1776

atgctggagc ggaccagcag mggcagcttt ggaggcaatg a 41

<210> 1777

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1777

aggtgtcctc actcacccca ycctccccaa ttccagccct t 41

<210> 1778

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1778

actgtgtggg gtatggcggg rtggtgggga gaatgtggtg t

41

<210> 1779

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1779

cgcggatttc ccggccagcc sccgtttcct gtgttctgca g

41

<210> 1780

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1780

tgcagcgttg acttgagcac ragacagtga cagtggagag t

41

<210> 1781

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion



<400> 1781

gaatttttga gaaaaaaaaa ntgttccttt agggttgcct t

41

<210> 1782

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1782

tcaggaacag gaagtaaaga rgtttacatt tctaaatttc t

41

<210> 1783

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1783

atcaaaaaca cttgtctgat katcgtgctc tgaacctgcc t

41

<210> 1784

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1784

atgacgctga gtttggtgct rttcttttgt ttttcttgcc t

41

<210> 1785

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1785

gggagaagtg agggacctac ycttggcttc taatctttca t

41

<210> 1786

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1786

ttgtcagaga catctttgat ratccttacg tactatatca g

41

<210> 1787

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1787

ttagtagata actttttttt ngtaaggatg gagaataata g

41

<210> 1788

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1788

catattcaat tcttttatgt ycttttagacc aaagaaaggc a

41

<210> 1789

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1789

taaaccttta agtcatcat yggaccatct attgaatttc t

41

<210> 1790

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1790

atttaaagtg aaagctatatt ytagttttaa aaattgagca g

41

<210> 1791

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1791

ctatttagca aacttttttt ngacagtgtgta taaagttttc a

41

<210> 1792

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 1792

gttttcaaca attgatattg naaggttggg agggcctagg a

41

<210> 1793

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1793

ccctcaagga gcttatagtt waggttgtagt acaatcatgt c

41

<210> 1794

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1794

tagaaaaaat tgtaatgtta raaagcatta ctgttaggac a

41

<210> 1795

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1795

agttcaagat gattttgttag sttcagggcc tagttgactt a

41

<210> 1796

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1796

atgattttgt aggttcaggg yctagttgac ttagcatgca a

41

<210> 1797

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1797

agaaaagttg cacaaatagt mcaaagaatt cccatgtacc t

41

<210> 1798

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1798

attaaaatct gctttaata yttttttggg ggagaggaca c

41

<210> 1799

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1799

ccgatcttca aaaaattagc ygggggtggt ggtgcacact g

41

<210> 1800

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1800

aaagttcaca tttttttttt nataacttca tggtaagag c

41

<210> 1801

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1801

taatgcacac attttttttt ncttcatagg gacatccaac g

41

<210> 1802

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1802

aaaacaaaaa acaaaaaaaaa nccttggtcc tttataggtt c

41

<210> 1803

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1803

gggtgtgggg aaactggccc ygccgcgca cttgtggact g

41

<210> 1804

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1804

tgccgcgaag aaattggcac wgctgagttc tacatgcagt t

41

<210> 1805

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1805

ttctgtacat caacttgtga wggattgagg ccagttctgg t

41

<210> 1806

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1806

taccgctttg cccctgacca rgggtaaatt cttcaataac t

41



<210> 1807

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1807

aggcacttct gcacacaccc rcgtctcatg cattttccct g

41

<210> 1808

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1808

atgttgaaga gattgctgat rttagacgtt aggatttatt t

41

<210> 1809

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1809

tagaaaataa gaggtttcag kttctctctg ctaaattccgg t

41

<210> 1810

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1810

atcctgcttt atacctgaac rtcttgagg cagagccaaa a

41

&lt;210&gt; 1811

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1811

aggcagagcc aaaagccaca rccaggagag tctgtaccga a

41

&lt;210&gt; 1812

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1812

attagttgtg gcatatactt kttttaaaaa agttaataa t

41

&lt;210&gt; 1813

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1813

aatcctgctt tctggtatac ygtacctgta gcttttgta t

41

&lt;210&gt; 1814

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1814

aggctaata ga atggtaagag raaggggcta tcctgattag c

41

<210> 1815

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1815

tgcttttctg atgttaatcc ncagggcatt gctgaataac a

41

<210> 1816

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1816

tttagaacat gacctgcctg yctctccac atgtgagatg a

41

<210> 1817

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1817

ctccacatg tgagatgact ractcagctt tttatttctc c

41

<210> 1818

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1818

tgttttcatt tttaaaaaa kgtttgactt tggaattcat g

41

<210> 1819

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ca or deletion

<400> 1819

ttggcttgct tactaataca ntctgcttca aaatgaacat a

41

<210> 1820

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1820

gtatttgta acttttttt nctcatttta aaattcttag c

41

<210> 1821

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1821

gtgtgttggg ggtggtggtt rgtagctata gtaaataagg t

41

<210> 1822

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1822

aaaagcacgt gggaaacaca rttaatcatg tcttaccgta t

41

<210> 1823

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1823

gctaaaacac tccaaagcct kccttaaaaa tgcgcactgg g

41

<210> 1824

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1824

cctccttgca gatTTTTTTT nctctttcag tacgtgtcct a

41

<210> 1825

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1825

tagcagggac cccagcgccc sagagaccat gcagaggtcg c

41

<210> 1826

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1826

ctatgtgaga cgtaagaag rtagaggtgg ccaagaagga a

41

<210> 1827

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1827

agttctcttt cttagcatgg mctacagagg tgcaactacc t

41

<210> 1828

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1828

gaaacttaaa tcttgagtca yacaattgtg tctacatact g

41

<210> 1829

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1829

attacacagt attttttttt naattttggg gaaagtcgat t

41

<210> 1830

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1830

gccaggcaga ttctgactc ntataaccca gagcttatca g

41

<210> 1831

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1831

taaccagag cttatcagag satttatgtc cccaaagaga a

41

<210> 1832



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1832

cagaataaca atgatggctc rgaaaaatat gggatatttct g

41

<210> 1833

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1833

acgttttgac agttgcacaa stttctttct ttaagcttta a

41

<210> 1834

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1834

aatatttttg aaaatcacta sggatcctg catagtgatt t

41

<210> 1835

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1835

gaaaaatttc agttcataca mccccatgaa aaatacatTT a

41

&lt;210&gt; 1836

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1836

acttatctta acaaagatga stacacttag gcccagaatg t

41

&lt;210&gt; 1837

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1837

caaagatgag tacacttagg yccagaatgt tctctaatgc t

41

&lt;210&gt; 1838

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents a or deletion

&lt;400&gt; 1838

tttttccaaa taaaaaaaa ntcaggtgat atctgtaa g

41

&lt;210&gt; 1839

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1839

tattaaagaa catgatgctt raaacagatt agggaaaact a

41

&lt;210&gt; 1840

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 1840

ctctgttgta gttttttttt nctcctaadc atgttatcat t

41

&lt;210&gt; 1841

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1841

ttatgttcag caagaagagt rtaatatatg attgttaatg a

41

&lt;210&gt; 1842

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1842

tgtccagaca agagaccaa ytgccgaggc atcatttagg t

41

&lt;210&gt; 1843

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1843

tttcaatctg aacattttac rtaagtgaag actttgtag a

41

&lt;210&gt; 1844

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1844

aaagttaggt ggtattgtat ytgtcttcct ttctcaatgt t

41

&lt;210&gt; 1845

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1845

aatacaaaca aacttgagct ytgccataac ttttcaagaa t

41

<210> 1846

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1846

tatctaagtt ttggagtcaa rtagcacttt gtttgaatcc c

41

<210> 1847

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gatt or deletion

<400> 1847

gattgattga ttgattgatt ntacagagat cagagagctg g

41

<210> 1848

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 1848

gtagcaatga gaccattttt ncttcagttg agctccatgt t

41

<210> 1849

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1849

gtagcaatga gaccattttt cttcagttga gctccatgtt

40

<210> 1850

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1850

gaatgttttg ttgtaacctg yataatctgg catgaaattg t

41

<210> 1851

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1851

catgctctct tctcagtcctc rttccttcat tatatcacct a

41

<210> 1852

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1852

tatggccaag acttcagtat rcgtggactt aattcttcct t

41

<210> 1853

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1853

atgaagacat tcattttttt nctccgtcca atgttggatt a

41

<210> 1854

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gt

<400> 1854

gtgtgtgtgt gtgtgtgtgt nttttttaac agggatttgg g

41

<210> 1855

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1855

gtgtgtgtgt gtgtgtgtgt tttttttaaca gggatttggg

40

<210> 1856

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1856

gaacacttta tagttttttt kggacaaaag atctagctaa a

41

<210> 1857

<211> 41

<212> DNA



<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1857

tttttcttca agaaattaga ngaggggaga aattggttta a

41

<210> 1858

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1858

tgaatcaaaa tcattctaaa ngctttcaga aaccagactt t

41

<210> 1859

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1859

atattaaaca gagttacata yacttacaac ttcatacata t

41

<210> 1860

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1860

gtgtggatag taaatgccag rgtaaatacac atagcatcta a

41

<210> 1861

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1861

atggaagaga agtttttagta raggggagga aggaggaggt g

41

<210> 1862

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1862

gagagagact tttttttttt naaggcgaga gtttactacc t

41

&lt;210&gt; 1863

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1863

gtattaactc aaatctgac wgccctactg ggccaggatt c

41

&lt;210&gt; 1864

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1864

tttgcagtat cattgccttg ygatatatat tactttaatt a

41

&lt;210&gt; 1865

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents at or deletion

&lt;400&gt; 1865

atacatatat atgcacacac naaatatgta tatatacaca t

41

<210> 1866

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1866

taaatatgta tatatacaca wgtatacatg tataagtatg c

41

<210> 1867

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1867

ggaagtataa atttgtaaatt mactgagacc caaacttaca a

41

<210> 1868

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1868

tgctattgac taatagtaat wattttaggg cagctttatg a

41

<210> 1869

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1869

tggtagtctt atgtggaaac mgtgaggaaa taattttata t

41

<210> 1870

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1870

caaaaaggta tggaagtcag mggagaagga gaccctatg t

41

<210> 1871

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1871

aagtatgcaa aaaaaaaaaa ngaaataaat cactgacaca c

41

<210> 1872

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1872

cattaataaa ataacaaatc rtatctattc aaagaatggc a

41

<210> 1873

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1873

tgacatttgt gatatgatta ytctaattta gtctttttca g

41

<210> 1874

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 1874

ttacctttaa cttttttttt nagtttgatc agctctcttt a

41

<210> 1875

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1875

atgcttttgg agttgggtct yataaatgta tagaaatgtt t

41

<210> 1876

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1876

atgtggaaca atcatgacta yatgcctttt actttctcta t

41

<210> 1877

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at or deletion

<400> 1877

agaatcaata ttaaacacac ngttttatta tatggagtca t

41

<210> 1878

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1878

ctgtcctaaa gtttaaaaag naaaaaaaaaa ggaagaagga a

41

<210> 1879

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 12 to 14 repeats of t

<400> 1879

cccttacaaa ctcttagaca nagtttaaca tgttacaaaa c

41

<210> 1880

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1880



actcttcccc cttgtcaaca yatgatgaag cttttaaata c

41

&lt;210&gt; 1881

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1881

gggtgaagct ctttccccac yggaactcaa gcaagtgcaa g

41

&lt;210&gt; 1882

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 1882

ggatgaatta agtttttttt naaaaaagaa acatttggt a

41

&lt;210&gt; 1883

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1883

aaaggggctg aaggggtctt ycttttgtgt tcccctgact g

41

&lt;210&gt; 1884

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents cac or deletion

&lt;400&gt; 1884

cacccaccca ccaccaccac naaggtaacg ttctgcccc a

41

&lt;210&gt; 1885

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1885

agcctgggca acatagtgag rcccccccg ccctttctac a

41

&lt;210&gt; 1886

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1886

aggaggactg tgaatcccag mctgcatgtt tgggtcggat t

41

&lt;210&gt; 1887

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1887

catctcacta aggaagaatc yagtaaccag caaggatgag a

41

&lt;210&gt; 1888

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1888

cccagactgc actcctgcag ygctgcctgg ctcctgtagt t

41

&lt;210&gt; 1889

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1889

tttcagagct gtctggaaat wtagggggca ggtgggaggg g

41

&lt;210&gt; 1890

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 1890

ccctaccct agcccagggg yccccacatg agtatgaatg g

41

<210> 1891

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cca

<400> 1891

agagaaccct tcattaacca ngggcgtggc tgaccagtgt c

41

<210> 1892

<211> 40

<212> DNA

<213> Homo sapiens

<400> 1892

agagaaccct tcattaacca gggcgtggct gaccagtgtc

40

<210> 1893

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1893

taaagcaciaa gttatcaccc rtggatggat ttgtcctttt c 41

<210> 1894

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1894

ttatctcccc ttgaaaggac rctccacaga gccagaaatt c 41

<210> 1895

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1895

cagagccaga aattctagaa sagggaaaag tggaggggag g 41

<210> 1896

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1896

ctgtgaactg caggacaga rggaaatggg tattgggaga a 41

<210> 1897

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1897

tgaactgcag ggacagaagg maatgggtat tgggagaatg g

41

<210> 1898

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1898

gacagaagga aatgggtatt rggagaatgg ccagccctcc a

41

<210> 1899

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1899

tgggtattgg gagaatggcc rgccctccaa ggggctgatg t

41

<210> 1900

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1900

ggggacagcc ttcagctgtg raattcctcc agtcctagag a

41

<210> 1901

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1901

cattattcca gtcctgaggc rtgagagcag aaggccgatg c

41

<210> 1902

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1902

ccgatgcttc tgccctccat sctaattgtcc tcctgcaggg a

41

<210> 1903

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1903

ccatcctaatt gtcctcctgc mgggacccaa ggtggatggc a

41

<210> 1904

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1904

ggtgagggtgta agcaggccac ytgggccagg gtgggggtggg a

41

<210> 1905

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1905

agacactgca tctggccac rtgtgctcta cccagggtc c

41

<210> 1906

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1906

cacgtgtgct ctaccccagg stcccagagg gagagggggg t

41

<210> 1907

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1907

gttcgctgag gttggcggat ractttccgt agaaaggga g

41



<210> 1908

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1908

tgtattcata tcgtcacgct sgtaaataaa tgagtaagt t

41

<210> 1909

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1909

ggcattaggt caaaatcctg rtgggacaaa aggggaaact g

41

<210> 1910

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1910

tctgtagaaa gtacatgggg rcatgaagat cattggcttg a

41

<210> 1911

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1911

gattcccagg gaatgttaa maggaccggg tcttcctaaa c

41

&lt;210&gt; 1912

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1912

tctgaccag taccagccag sggggcaagt ttccatcccc c

41

&lt;210&gt; 1913

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1913

gttgccatct gagatcttgc yggaagtaca caagagacc t

41

&lt;210&gt; 1914

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1914

ttccactggc cttttctgct yagtaattgc tacattacag g

41

&lt;210&gt; 1915

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1915

gaggaagctg cctcccgtg rggacaggaa gcgggcatgg c

41

<210> 1916

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1916

cccaggagtc caacctcct ktgtccagct agaccatggt g

41

<210> 1917

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1917

cctgggacat gttttcttat rtaaacagca tcaaaagatg t

41

<210> 1918

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1918

gccccgccag gactcctcac stgtccaagt cacctaggga g

41

&lt;210&gt; 1919

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 1919

tccgaggatg tgtttttttt nccctccgtt agtcagcagt g

41

&lt;210&gt; 1920

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1920

tcctgctcat atgcggcacc rtcagacttc tgggcaggca a

41

&lt;210&gt; 1921

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1921

ggtattgatt aaaagcctca ygggcagaga aattcgccat c

41

<210> 1922

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1922

tgtgtattgt agaagtgatg rgaaatccag aacagaaagc t

41

<210> 1923

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1923

gccctctcat ttcctttcca rtgctgagcg tttccagtgt g

41

<210> 1924

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1924

gcctctgtcc acagactttc rtgggccacg tcagcttctt c

41

<210> 1925

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1925

accaagaatg aggccatccc ktccccacgt ggctgccc a t 41

<210> 1926

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1926

tgggttcaaa gatggaatgg kgcataactc agcaaaatta t 41

<210> 1927

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1927

gggagggagg ctggacaggg satgaaggca gagcctgg t g 41

<210> 1928

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1928

ggaggtggga cccaggatgg ygtttcttgg gaccacaagg a 41

<210> 1929

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1929

actcccccg g cccactcac rtctgccacc ttccctccct g

41

<210> 1930

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1930

actcattcca agtattgatc ragaagagag gtaggtactg g

41

<210> 1931

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1931

ttgaagatct taagttgttt ytggttcact catttcgcaa a

41

<210> 1932

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1932

agctaaaagc aaaacagcct ytgacctggc aagcattccc a

41

&lt;210&gt; 1933

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1933

tgtcctactt ttcttttgac sc ttataact tcctgacttc g

41

&lt;210&gt; 1934

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1934

ccagctccta gtgggctgga rggaaggaca tgcggttggg g

41

&lt;210&gt; 1935

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1935

ttgcaaactg agttagggcc yggagagctt actgtgtgct g

41

&lt;210&gt; 1936

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 1936

tgcaattgcc gcctacttat kccagaccca atgattgggt c

41

<210> 1937

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1937

tatagattaa tgaggctctg rgtcacctcaa aaccttcct c

41

<210> 1938

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1938

cccttacctc tccaaaaaac rcttgagata ccctagaggt g

41

<210> 1939

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1939

ctcaggatct tcctggagga yatggttcac tcccatgaga g

41

<210> 1940

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1940

actaagcaga tttctaccaa ytgacacctcc ccatccccctt g

41

<210> 1941

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1941

gaacaagccc ctgagaatgc yttccgcacc ccctactccc g

41

<210> 1942

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1942

acaagcccct gagaatgcct yccgcacccc ctactcccgc c

41

<210> 1943

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1943

gcccttccat cgatcaccca yaccagcca tctcactccc c

41

&lt;210&gt; 1944

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1944

tctcactccc caggtgctta yctgcactcc agcctctcca t

41

&lt;210&gt; 1945

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1945

cataggggag agggcaggaa yggagggaag ggagagagcc c

41

&lt;210&gt; 1946

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1946

tagtatitaa cctgccc aaa ygctgtgtga agtgctgacc t

41

&lt;210&gt; 1947

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1947

tcccctccac aagcttagac raacaggatt ctctgtgac t

41

<210> 1948

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1948

tttggtgaca gggcatcaac ytgtctggtg gtcaacgcca g

41

<210> 1949

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1949

caaggatagc acaaatgacc nattgcagac ttcagatgga g

41

<210> 1950

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1950

gaaggtgggt atatccaggg rtggccaagc agccaccct g

41

<210> 1951

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1951

gttctgctag aacctgaact yataaaggct ttcctgtcct t

41

<210> 1952

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1952

gtgagcgtct gcacatcaa staaagattg ttttctcctc c

41

<210> 1953

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1953

cgataagtgg gtgtaatttg yccatcccca cccatgagtt c

41

<210> 1954

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1954

cagctccctg cccctcccctc rctctctctc cctcagccag c

41

<210> 1955

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1955

gacagctgct gagtcaggcc ragccggcag ctgagaaagg c

41

<210> 1956

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1956

cagctgagaa aggcggcagt sgtcagatgg gcttgagaaa c

41

<210> 1957

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaaa or deletion

<400> 1957

cctccaaaaa ataaaaacaa ncagaaatga aggaaataga a

41

<210> 1958

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1958

tggggtaagc ggaagacggg rttgaacgct ttgagtttgg t

41

<210> 1959

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1959

ctcttaggga tcttgtctaa ktaaagaaga gcagagcaaa g

41

<210> 1960

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1960

cagatcccag cttcctgtaa rcagcctcag atcaggccaa a

41

<210> 1961

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1961

gcgcctcaca ctcctataac rcgcacatgc cctgatgcac a

41

<210> 1962

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1962

atgccctgat gcacacacat yttcaacacg cacttactct a

41

<210> 1963

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1963

agacacgtca cctcccaca ygtctccacc ctgggggtgt g

41



<210> 1964

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1964

tcagtcccct cagacacatg mcctctctcc acgcagagac a

41

<210> 1965

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1965

gcggccaagg agagtgatga yggcagccca ggttgatcag a

41

<210> 1966

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1966

gctcctgggg ctccagcctt ygcagccctt gtgtgtgtct g

41

<210> 1967

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1967

ggcttcgcag tcacctcgtg kccctccagg gccgaggcct c

41

<210> 1968

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1968

agggacctgg gggcagacag ygaggccacc cttgtattga g

41

<210> 1969

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1969

cccagggaca ggactggcct sttgtggccg tcatcagtgc a

41

<210> 1970

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 1970

aggacattct ggccacatgc ntcatectcc tcctccaagc c

41

<210> 1971

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1971

tggccccac cgcggtggt rttccacca tcctgaccgc c

41

<210> 1972

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1972

tggtgtttct ccttaaagag mtatttgttt ttcccccaa a

41

<210> 1973

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1973

gctggccttc tggcttgcag wagtgtatt ttaagaatca g

41

<210> 1974

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1974

tgcagaagtt gtattttaag ratcagagct cttgtgagga g

41

<210> 1975

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1975

ttctgtggaa atcagaggct stctaaaata ttcctaattt t

41

<210> 1976

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1976

tggacgcact caacattttc ragttattac tccttcaact c

41

<210> 1977

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1977

aggatatcat gaaacactga mtcttagtaa aaactatctt t

41

<210> 1978

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1978

tactgtggaa tttttcttgc macagagata tgtatttttc a 41

<210> 1979

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1979

cagtggtaga tgtgttttct rttgccatca tctacaaata t 41

<210> 1980

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 7 to 9 repeats of t

<400> 1980

tgttcaaata ggcttttttt ncagagaatt gaatgctttc t 41

<210> 1981

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 1981

tcagtcgtat tcctactaaa ncaaaatttt gtaagttatg t

41

<210> 1982

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1982

ctttttatatt gctgcttacc rttttactaa ggttggtat a

41

<210> 1983

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1983

cttttaataa atgcaaactg yacacctggt ctataaaaag a

41

<210> 1984

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1984

cctatagaat ttttcttttc ktttttctca aaaaaattaa a 41

<210> 1985

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1985

tttctttttt ctcaaaaaa ytaaattgttt gttatttatt t 41

<210> 1986

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1986

ttctgtagat gaagcttaag wgctagatct tatttgaaaa a 41

<210> 1987

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1987

tttttaactt attgtttgcc ktttcatttt ttaatagaaa a

41

&lt;210&gt; 1988

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1988

cgaatttgct gcttttagag waatctttgc aaataataaa a

41

&lt;210&gt; 1989

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1989

atttttcttc ttgtaagtat sagtgataga gctgactgca g

41

&lt;210&gt; 1990

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1990

atttgtaaga cttttaaaat ragataattg tgctgggtgc t

41

&lt;210&gt; 1991



<211> 41

<212> DNA

<213> Homo sapiens

<400> 1991

tgtgctgggtg tctatatctt rctgagaaaa ctagaattta t 41

<210> 1992

<211> 41

<212> DNA

<213> Homo sapiens

<400> 1992

ataagtgtc tcccagtgtt rattggactt agagcatttt c 41

<210> 1993

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents taac or deletion

<400> 1993

caaaacagaa taatgaaaag ntattatcta aaataataaa a 41

<210> 1994

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ctcttt

<400> 1994

aacatactct cctcctctct naagtcaaaa tatattagta t

41

<210> 1995

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ct

<400> 1995

aacatactct cctcctctct naagtcaaaa tatattagta t

41

<210> 1996

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 1996

aacataactct cctcctctct aagtcaaaat atattagtat

40

&lt;210&gt; 1997

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1997

ttctgtgaaa gtgtcccaa wtgtgccttt aaattgtttt t

41

&lt;210&gt; 1998

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1998

agtgtcacat gtattttttc yggatttcct atgtttatca a

41

&lt;210&gt; 1999

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1999

ctcatttcaa acttggttat ytggaactctc cccaggcatt g

41

&lt;210&gt; 2000

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2000

atcccctagt gatgtacact ragcttgcct ccactcttcc t

41

<210> 2001

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2001

ctgatttata tattagctga ytttccaagt tcagacatct a

41

<210> 2002

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2002

ttcttttact tcaatgtagc nccaaatcag aaggtgacat t

41

<210> 2003

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2003

atcccactgg atttaattac mttgtgtagc ttgtacaacc a

41

<210> 2004

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2004

attttggaag agaaattata kaaccttcca caactgaatt t

41

<210> 2005

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2005

aatcctggtg tttttttttt nctttttcat ttttcagtag g

41

<210> 2006

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2006

aagtaactca aggaaagatg rtttaacttg tgaaatcgta a

41

<210> 2007

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2007

ctcatagttc agaagagttc mgagcccaat tcagaagagt t

41

<210> 2008

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 2008

tgaacctata aaattctaatt nccatctttg gatgaggatgc a

41

<210> 2009

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2009

ccagggacaa aagaagatga ygtaaactta aggattggga c

41

<210> 2010

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2010

agcaagccag gaagaaagtc sattaagttg tatttagaaa t

41

<210> 2011

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aattagaa or deletion

<400> 2011

atagccatga aggataagaa ntgccatttg ttatgtttca g

41

<210> 2012

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tttaaaa or ttttaa

<400> 2012

aactctttct cttcatctgc ngcaagcctt gaaggagagt g

41

<210> 2013

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2013

gcatgcaaaa taatgaagaa racaatcttg tctgacattg a

41

<210> 2014

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2014

aaatatttca gaatttgggg rtgtagagca tttgccgtca t

41

<210> 2015



<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2015

cttgtaagtc tttttttttt naaagtaatg aaaatttcta a

41

<210> 2016

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2016

agacaacact gcttttttgt rtgttcacaa ttcaacgaca g

41

<210> 2017

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2017

aactggctga aaggaaaaaa wtcattttgc tgtaaattt t

41

<210> 2018

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2018

tgcttttgct ttccacttca rtatccagaa aactctctca t

41

<210> 2019

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2019

aacatggaac tatagtaaata rtagtttttt tgggggttcag a

41

<210> 2020

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2020

aatttacact tttttttttt ngcaggagaa tattttgcaa a

41

<210> 2021

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2021

aatggagctc atgcatgtgt kttcaaatat atacatgcaa a

41

<210> 2022

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2022

tatttcctta gccagcggta ycacagtgtg tttagtgaat t

41

<210> 2023

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2023

tcacattgcc ttgacatcac mcctactgct cctccaccct a

41

<210> 2024

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 2024

agtcctgcaa gggtagacacc nttatgccac aagcagttgg g

41

<210> 2025

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2025

tgagtccttc tgaagtcaaa natgcggggc actttttgaa a

41

<210> 2026

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2026

tctgaagtca aatatgcggg kcactttttg aaatccttgt t

41

<210> 2027

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2027

aagggaatcc ctgagctgag matgaccagc ccagtggttt c

41

<210> 2028

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2028

cctccctgaa gtcctcagca mtcttagctg gttcctcgcc c

41

<210> 2029

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2029

tgcttccaag gaagttcatc kcagtattat ttgtaattag c

41

<210> 2030

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaa or deletion

<400> 2030

tgtaattagc aacaacaaca ngaaaagaag ctaaatttg a

41

<210> 2031

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2031

ttatttgc attaaagaaa nctcaagcgc ttagcctggc a

41

<210> 2032

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2032

gagaatatgg gacaccctt kttcatcctc tcatccagca t

41

<210> 2033

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2033

tccttcttgc atttatTTTT rgctggatgt ttttatgcct c

41

<210> 2034

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2034

aaccagctca atgggttagg raggacattg atcgtcatcc c

41

<210> 2035

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2035

gagtcaaggc agtcccctga ygggctgac ctttgctctg g

41

<210> 2036

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2036

atggaaggtg tgtccattca mcctggccaa gctgggaaga a

41

<210> 2037

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2037

cagtatttta gatggtaaag yattatgatg taatatattg t

41

<210> 2038

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2038

ttggcatgtc agggctgcaa ractcatgta gaaatcactc c

41

<210> 2039

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2039

cgctgagtgc atgaatagtc yaggcttgag ggtgatggga g

41

<210> 2040

<211> 41

<212> DNA



<213> Homo sapiens

<400> 2040

taaggcatcc aagccccttc rtaattggac actacctacc c

41

<210> 2041

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2041

tctgtcatga cacttagcag kcagcccagc aggtgaaggt t

41

<210> 2042

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 2042

tgtggtcctg aaggtcctgc ntgacatctc tgctccccac c

41

<210> 2043

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2043

tgtggtcctg aaggtcctgc tgacatctct gctccccacc

40

<210> 2044

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2044

gaggtgggca gaggtgcagc ycactactgg attcctcagt c

41

<210> 2045

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2045

ggagtagatc tagcctggaa kagcgagtga gtcactgacc c

41

<210> 2046

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2046

gtagatctag cctggaatag ygagtgagtc actgacccca c

41

<210> 2047

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2047

ctcctgagca tgaactctcc wcccctccac tctgctgtca g 41

<210> 2048

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2048

acttcttcat ttcagctgtc stcttgccca gggacagttt c 41

<210> 2049

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2049

cctccaaaat caacaatcca rttatgcct gtctgctagt t 41

<210> 2050

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2050

aggaactatc caaagagaaa yacattcata tacttcgcag g

41

<210> 2051

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2051

gtcgtgtaaa ctgaaaatct saggagttga tggcttcagg c

41

<210> 2052

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2052

atatagatat acgaattcac rgagtgatgc gggaagaacc t

41

<210> 2053

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2053

cgtgtttgtt tctgaggccc mgagaggggt agtgactcac c

41

<210> 2054

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2054

cctgatggca acacatgagt ygggctctct ctaatctgtg a

41

<210> 2055

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2055

aaaaattatt catcaaagg t raaacctaaa attaagacat g

41

<210> 2056

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2056

ccatggcgca tggccatgcc rgtctatgg t actggctctca c

41

<210> 2057

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2057

cgcattggcca tgccggtcta yggctactgg t ctcaccctca g

41

<210> 2058

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2058

gtgggctgga gaagctgcat ygctcacccg gggctggtgg t 41

<210> 2059

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2059

gagaagctgc atcgctcacc mggggctggt ggtcactttt t 41

<210> 2060

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2060

ctagcaggtg ccctgacaca scyttgcaca ggaaggggca g 41

<210> 2061

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2061

gccctatgct ctgcgtctga rctatatata gagttcccat c

41

&lt;210&gt; 2062

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2062

ttctcatttg ggatgctaag rttaaaaatt agcataacac t

41

&lt;210&gt; 2063

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2063

catttgggat gctaagatta maaattagca taacacttcc a

41

&lt;210&gt; 2064

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2064

cattcacaaa agctctttct yctatggttg gctctgagtt t

41

&lt;210&gt; 2065

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2065

caaatatattg gctctaattc ygcttccacc tcagacagct a

41

<210> 2066

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2066

gcgcctctgg gcatctcact rtgcatgctt aggcgcttg c

41

<210> 2067

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2067

gtgcatgctt aggcgcttg sggctctgtt gtttttcaga a

41

<210> 2068

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2068



aacggtgatg aaagaggcga ygtgagaagg aaggtggctt t

41

<210> 2069

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2069

ttgcatggca cttactgacc rttgcacagg cctgcaacac c

41

<210> 2070

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2070

atttctggat tctgttagta ygtagaaagc tctaaagcat g

41

<210> 2071

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2071

aaatctgctg ctgggagaga sagcaaagca tgcagatcaa c

41

<210> 2072

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2072

acagtgggct gatgcataga ncctgtagca atccaccagc a

41

<210> 2073

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2073

tgtcactgag gtagttcgca racattttac taagtcttca g

41

<210> 2074

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2074

aatgctaaaa aaaaaaaaaa ntcactgtgg tactttgggg a

41

<210> 2075

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2075

tgccatcata agcagaaact tctctctctt cttggaagct

40

<210> 2076

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2076

gtctagagtc tttcaaagag wacacattct gagatttgag g

41

<210> 2077

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2077

agcaccaccc cattgcaggg tggaatgaca gtaatgggcc

40

<210> 2078

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2078

tgcccttccc aggaagatgt rtttctctgt cctcagccac a 41

<210> 2079

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2079

ctgtcctcag ccacatgaaa rtcttttgcc taccgtgcct g 41

<210> 2080

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2080

agctcacgat caagtcacag yttaactgga cacattattt t 41

<210> 2081

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2081

gcttaacaac cagcataaaa ragagcagca tgggacacgc t 41

<210> 2082

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2082

caggactgta gctgctggcc yaaaatgagc ccattcctgt g

41

<210> 2083

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2083

ccctctcaat ctggcctttc sctggcatgg gtgggcgact c

41

<210> 2084

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2084

gctcccaggg agatggagcc rctcgggctg agggccttgg c

41

<210> 2085

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2085

ttctgtctgg cagcctccc ratggctccc cacctgctac c

41

&lt;210&gt; 2086

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2086

ctccctgggg tatgcctgta sgcagttaag cgtcaaggac a

41

&lt;210&gt; 2087

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2087

atgccgctct ggggagggga gctgagcatg attttgggaag

40

&lt;210&gt; 2088

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2088

ctgagcatga ttttgggaagc yggcagaaga ggctattgtg a

41

&lt;210&gt; 2089

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2089

tgcagcaacc gccccgccc yccgccaaaa acaaacacac t

41

<210> 2090

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2090

tttacccttg gaacaggcag rccaagctgg ctggtccct c

41

<210> 2091

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2091

aacaggcagg ccaagctggc ygggtcccctc cctgatacac a

41

<210> 2092

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2092

gtgtgtggct ggtttcttag saagcaccat ggttccaagt t

41

<210> 2093

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2093

gggagatgaa cgtaagtgga rggcaggcct acaaggttgc a

41

<210> 2094

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2094

ccactggatc tgcttttgga rtcaagagtc cttaagctcc a

41

<210> 2095

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2095

gatttttggt ggctttgcaa wggatcacag tcatttattc a

41

<210> 2096

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2096

tctgagcctc tttccttaac ygcagagtga gtggctacag a

41

&lt;210&gt; 2097

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2097

cttaactgca gaggtagtgg ytacagagaa atctttacta c

41

&lt;210&gt; 2098

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2098

tcaagcagca gcagcaactg gtggagtctt cttgaactaa

40

&lt;210&gt; 2099

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2099

aacactccta tgcccctctc rgcacaaaat gacgtgtccc c

41

&lt;210&gt; 2100

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2100

ccctctcggc acaaaatgac rtgtccccc ttgcttcccc t

41

<210> 2101

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2101

caccagcac agggactggc wcacatgaga tgctcctgct t

41

<210> 2102

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2102

tggtgagatc cctacatgc rggggaggaa gttgcacacc c

41

<210> 2103

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2103

agcatggagc actgagtgtt yttgtggctt tgctgagccc c

41

<210> 2104

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2104

tgcttgggtg gagtgaatca ytgtaggaga aaaactcagt t

41

<210> 2105

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2105

tgaagtcagg tttacaaagt saagtttact tcttgggaga a

41

<210> 2106

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2106

tgaaaaccaa tgaccctctt yccaagaaaa atggccacat a

41

<210> 2107

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2107

ccttggggga gctcagtatg rttcttccag gagaagcctg c

41

<210> 2108

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2108

gaaagttggg tttcatgttt ygcactcaca ttatgagtga a

41

<210> 2109

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2109

ctagacattc tcacagagcc ragggcagca aggcggggct c

41

<210> 2110

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2110

ttcacctctc tccatggacc rgtctcccct gtcctcaat g

41

<210> 2111

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2111

caaattcctg ggaacaaatc rggttgaccc agctttattc t

41

<210> 2112

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2112

acaaatcggg ttgaccagc kttattctcc ctgtcccatc a

41

<210> 2113

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2113

ggctgtcaga gcctacctgc ktgaatgggt ggaagggcag g

41

<210> 2114

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2114

ctgcgtgaat ggggtggaagg rcaggtctca gagaattggg t

41

&lt;210&gt; 2115

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2115

agacacacag agcatgggac ygagaggcga gcagaccctg c

41

&lt;210&gt; 2116

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2116

gagcagaccc tgccaaaact rggagactga atagatcgct c

41

&lt;210&gt; 2117

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2117

cgtgcttctg cacagccacc ygggaaggta tgccgatggt t

41

&lt;210&gt; 2118

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2118

attctcagca gggaggatta rtggtaaaag cccaggaatg g

41

<210> 2119

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2119

ccccagagc cacagcagcc stgtctcctg ggtggtcttg t

41

<210> 2120

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2120

agtataataa aagcaggagc yatagcccc aactctcaag a

41

<210> 2121

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2121

aggggagtga cagtgggcac actctcaggg aaccattac

40

<210> 2122

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2122

gcaccactct cagggaacct rttactgtga gagaagccac t

41

<210> 2123

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2123

agagaagcca ctgtgccact stgtggtcga acttcaagac c

41

<210> 2124

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2124

ggctgtccag cacacagggg aggcctcttg gccactgggg

40

<210> 2125

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2125

aatcacttgc cccaagggtca ycttaactgt taggtgttct t

41

&lt;210&gt; 2126

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2126

acctctaggg gctcccagag rccccaagaa cagaaccttc c

41

&lt;210&gt; 2127

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2127

cacccttgca gacctcagac rggtcctggg ggcttgcttt c

41

&lt;210&gt; 2128

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2128

ccagaggaga aagctctgcc rtagtcggcc tcagttaacc a

41

&lt;210&gt; 2129

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2129

aggagaaaagc tctgccgtag ycggcctcag ttaaccacgg a

41

<210> 2130

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2130

gcaggcatta aaatgggact ktgcctttat tgctcctggg c

41

<210> 2131

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2131

ttaaatacca aatgagttct sattaacaaa gaaagaggga a

41

<210> 2132

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2132

ggaaaatctc agtaaaccac ygtgacggca tctaccact t

41

<210> 2133

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2133

ctttcgggtg gatattgcta ygtcaagtgt ctgggaaagc c

41

<210> 2134

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2134

ccactaatat gcattcttta staagcggtc tcaatataca c

41

<210> 2135

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2135

aaaaagcatt ttgctcttat raaagcacag cctcttttga g

41

<210> 2136

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2136

cccagacaac ccaagcagag rcctcttagg gccggaatca t

41

<210> 2137

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2137

agcacaggat caaggcctaa rggcccctta gactgacctc a

41

<210> 2138

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2138

ttgccatttt gatctgtgac ytttttttcc agaaatagtt t

41

<210> 2139

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2139

atggagggct ccctcgggac yaggcagtat tcagagatgt a

41

<210> 2140

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2140

aaacagcaat tagaatcact ytgaaatagt gatagtattt a

41

<210> 2141

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2141

aggagggggg gagttttcaa rcatatagga gatcagactg t

41

<210> 2142

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2142

tataacctaca aacatatata yattttaaaaa attgttttac t

41

<210> 2143

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2143

gatgtgggaa agttagagaa sagccattg tactaatgct c

41

&lt;210&gt; 2144

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2144

aggcttcttg actgtctaga yagcaagtct aatcatttgt g

41

&lt;210&gt; 2145

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2145

gtaaacacgg ctgtgggatg yttttacaaa cacaatatcg t

41

&lt;210&gt; 2146

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2146

tgatgagctt gttattggtg rggtacagcc tattaattta g

41

&lt;210&gt; 2147

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2147

tcgtgtctct gtcttgatct ytgcttggtt ttaggccaac t

41

<210> 2148

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2148

aacttttgaa gaactggaac rcgttaggaa gttgggtcaaa g

41

<210> 2149

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2149

acttttgaag aactggaacg ygtaggaag ttgggtcaaag c

41

<210> 2150

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2150

ggcctggcac agatgaaata ytattcagag ttcacagtgt a

41

<210> 2151

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2151

cagtgtattt tcatttcata rtatatattga ttttcaggtc t 41

<210> 2152

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2152

atcatgtaat gtactttaga stcagatata taaatatttg t 41

<210> 2153

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2153

gacttcccaa cttaccttag yggagctgta gtcacataga a 41

<210> 2154

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2154

acgctcataa atgcttctct rggctgtaaa ggttgaattt t

41

&lt;210&gt; 2155

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2155

gtagacgca ggcattacct ygtggctttg cccagtggtg a

41

&lt;210&gt; 2156

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2156

gggatgtttg cccacatcca ytggcatttc tcaaaaggaa c

41

&lt;210&gt; 2157

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2157

cagctgcctg cgctggagag rgctcaaacc tcttccgcca g

41

&lt;210&gt; 2158

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2158

agcaaagatg ccctttgact ycttttccca ctagtggtgc t

41

<210> 2159

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2159

gaatgaggtc acttgctgca wggcaggtgg ctccccatg a

41

<210> 2160

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2160

cccaaataat ttgttttttc rttttaggaa ttaaatttca g

41

<210> 2161

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2161

aagaaacaaa catttattga saacttttgg tgtgtgacct g

41

&lt;210&gt; 2162

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2162

tggtatttct taaagaaata ycaattccat ttccttttaa c

41

&lt;210&gt; 2163

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2163

aagatcatta ttaatatctc rtcagcgtgg tgtcacttaa g

41

&lt;210&gt; 2164

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2164

tgagaacatt acatgggacc ygccccagg gcatggaggc t

41

&lt;210&gt; 2165

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2165

tcaccctgtg gtcgggaggt rtgagtgagc tatccaagcc c 41

<210> 2166

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2166

ttgggtttca gtgtcagcat rtagctgtct actcagatcc c 41

<210> 2167

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2167

aagggcacca aagttctaag rgatgagggg aggagctgag c 41

<210> 2168

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2168

ggagctgagc cccttgcct yatctaggtt tcccttggtc t 41

<210> 2169

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2169

ttcccatccc tcagtctgct ycttttccca gtaccaacat g

41

<210> 2170

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2170

tcacctgtgt gggtagcaaa yctcagaaaa tcaagtatag a

41

<210> 2171

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2171

gagtccttta aaacacaaat sttaatgttt gaaatcaact c

41

<210> 2172

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2172

tgctgggccc tgtgtgatca kgaatggctg atcatggatg a

41

&lt;210&gt; 2173

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2173

gggactcccc tagagctgaa rtactctccc atctgtttgt t

41

&lt;210&gt; 2174

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2174

ggaagatgaa gaacctaagc ygcttccaga aattcatgag g

41

&lt;210&gt; 2175

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2175

gtctaccctt taggaccatt rtaagagtac attgaggtaa t

41

&lt;210&gt; 2176

&lt;211&gt; 40

<212> DNA

<213> Homo sapiens

<400> 2176

actgctcacc caggaggcaa gcctcgagtc atgcaccgaa

40

<210> 2177

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2177

acagattatt ccattgtatg atgaactatg taagccatcc

40

<210> 2178

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2178

ctggctgccg ctggggtttc ytatgtccat ccacggggag g

41

<210> 2179

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2179

ctgagttagg tctagatggg racactttgg atgaatgagg a

41

<210> 2180

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2180

tatcaaatac aactcagacg kcagtctcct ggcccccttg a 41

<210> 2181

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2181

cctgctttcc aaacccttat yttgattcct ggtaacatga a 41

<210> 2182

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2182

tttaaagaac agtgagtcac rtgacttgct ctttgaaatg c 41

<210> 2183

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2183

gacatgccat cagaccactg ygagtgttca ggcagcctac c

41

&lt;210&gt; 2184

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2184

ctccttccac acttgtgtgc rgggacattc actacctcct a

41

&lt;210&gt; 2185

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2185

gctgtcaata aggaccaaaa yagactaatt tcaaattcct c

41

&lt;210&gt; 2186

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2186

agctgctagg aataaaaagg ragacaaaac gatccacaag c

41

&lt;210&gt; 2187

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2187

aataaaaagg gagacaaaac ratccacaag ctagagatgg t

41

<210> 2188

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2188

aatcacagct catctgctgc rcatagggga tcccaaaaga a

41

<210> 2189

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2189

aatgtaacag ccaaagtcct rgaaaaaggc aagccagttc c

41

<210> 2190

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2190

ctaactgtga attatcatct ktgatcactg ccctttgaga t

41

<210> 2191

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2191

gagttctcag cagcaaactc cagtatgaaa ttttggattt

40

<210> 2192

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2192

tccagagggt tagaacctca ycaagtggga ctctaggagc c

41

<210> 2193

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2193

aggatttttg acttgcttaa ytaccatgaa tgagaaactc t

41

<210> 2194

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2194

tgtttagtca ggcacatatg acatccgact ttcaaataag 40

<210> 2195

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2195

tctccccaac atttatgtgg aagtaagttt acatttggtt 40

<210> 2196

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2196

ttgaggcctc cacacccac rgcaggttgc cccctgagga a 41

<210> 2197

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2197

cttggcaggg aggtagggca yggggtgggg taggaggact a 41

<210> 2198

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2198

ctgggggcag ccattcccca rcccctcacc cagctctgac t

41

<210> 2199

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2199

taaatttgaa tgagtaattc rtccatctcg gcctcagttt c

41

<210> 2200

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2200

aaaaccccat gaagtgggtca rggcaggcat cattatctcc a

41

<210> 2201

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2201

aaaaccccat gaagtgtgtca rggcaggcat cattatctcc a

41

&lt;210&gt; 2202

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2202

tagtagagta tgtgttggtc ragcagagcc aggggcaagc a

41

&lt;210&gt; 2203

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2203

tccttgggca agttaatctt ratgaagaga ctgggtgttc t

41

&lt;210&gt; 2204

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2204

cagagtcaga ctctggaaag kcggggggat aagaacacag c

41

&lt;210&gt; 2205

&lt;211&gt; 40

<212> DNA

<213> Homo sapiens

<400> 2205

agagtcagac tctggaaagg ggggggataa gaacacagcc

40

<210> 2206

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2206

ccaacatttg ctaagcaccc rccttcaaaa acctggtatt t

41

<210> 2207

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2207

gtattttcat gtaaattatc gatacacagc tgctatggaa

40

<210> 2208

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2208

tattttcatg taaattatcc ratacacagc tgctatggaa a

41

<210> 2209

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2209

ccagctgaac accacgtgcc rggtgtgtgc tgatataaac a

41

<210> 2210

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2210

tgcttggtga gacaaagggg agctcccgcc cactagaaac

40

<210> 2211

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2211

ctagacaaag gggaagctcc ygcccactag aaacttgcag g

41

<210> 2212

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2212

gaggggacct tgttgggctg raggtgtcct gccagctgga g

41

&lt;210&gt; 2213

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2213

gacactgtac agccagccca tcctgacccc ttttcttcat

40

&lt;210&gt; 2214

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2214

ggaaataaaa ctgacatctt raggtacat gaactaacca a

41

&lt;210&gt; 2215

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2215

atttgggtcc cagttttatg kagggtcatc atccctgtgt t

41

&lt;210&gt; 2216

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2216

tctgcagagc atgggtcagc ytcgagatgt ctcagtactc a

41

<210> 2217

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2217

cctcttcccc tccttgctct accctgtctc agttctcagt

40

<210> 2218

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2218

gttctcagtc cggtttcttc rtatcttgca gatttatcca g

41

<210> 2219

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2219

cgatatcttgc agatttatcc rggcacctcc agcccagcag t

41

<210> 2220

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2220

tttgtāgcct attcctataa raatgcacca ttgcttccca t

41

<210> 2221

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2221

taaaaatgca ccattgcttc scattacctc cctccacaca t

41

<210> 2222

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2222

acctccctcc acacattttt rcaaaacgtt tcaggaggatt t

41

<210> 2223

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2223

ctccacacat ttttacaaaa ygtttcaggg agtttactga g

41

<210> 2224

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2224

ttaaacagac tgggtccccta ygggcaggac agagaggatg a

41

<210> 2225

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2225

gagaggatga gctctcactc rtctgcctct ttcctggctg c

41

<210> 2226

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2226

gttaggtgct gctgacatct rtccagcatc tgcttgactg g

41

<210> 2227

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2227

ggcaggacga gtcctgagca ygcttcactg gctcagacag g

41

<210> 2228

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2228

actgagctgg acgctagaaa kaaactatag gcttaagaca c

41

<210> 2229

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2229

tagagaagtt tacttccatc rggacacatg catcttttct a

41

<210> 2230

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2230

ttgaaggata ctcagtaatt rcttttttttc ttgcagtatt t

41

&lt;210&gt; 2231

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2231

gtgtttggtt cacacagctc yggagaaaaa caagtcacgg c

41

&lt;210&gt; 2232

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2232

ctccggagaa aaacaagtca yggcacagcc ttgacttggg a

41

&lt;210&gt; 2233

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2233

cccaagtctc tggatggggc rtctgatcag gatgcatgca g

41

&lt;210&gt; 2234

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2234

atgcatgcag agcctggctg rgatgaggga gggctgctac c

41

<210> 2235

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2235

accacttatc tcaacagatc sgggacctgt ggcctattta c

41

<210> 2236

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2236

aagtcactaa gctggttggt rggaggaaca gcacataacc c

41

<210> 2237

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2237

tgggaggaac agcacataac ycaccttatc tatgctgagg t

41

<210> 2238

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2238

ggacactgca tagatatcta yagaaatagc agcatgtcag g

41

<210> 2239

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2239

acactctctg gtggaccatc ctcattccaag agagggtaac

40

<210> 2240

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2240

tctcgctctt ctcttacctc yaggtgtttg taaattttgc t

41

<210> 2241

<211> 41

<212> DNA

<213> Homo sapiens



<400> 2241

agagagcccc acccacacca yggtcctac caagtcccca c

41

<210> 2242

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2242

gcagttaatt ccaaactttt tcccttattg gatgagatca

40

<210> 2243

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 14 to 16 repeats of tca

<400> 2243

gtaaattca gttgaatcag natttttcag tctggttcct g

41

<210> 2244

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of a

<400> 2244

gaggggcggg gactataggc ncagcctaata tcaaggatga g

41

<210> 2245

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cacagtcac or deletion

<400> 2245

ttgttggtt tgcaatggat nttattcact cattcattca c

41

<210> 2246

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tt or deletion

<400> 2246

cctgtccatc agactcttct nacctctccc cgaggagccc a

41

<210> 2247

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 10 to 12 repeats of a

<400> 2247

cctgggtgac agagcgagat ntagcatgag atattattac t

41

<210> 2248

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 2248

cacaaagcat ctgacacccc natccagccc tggctaactt t

41

<210> 2249

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 16 to 18 repeats of a

<400> 2249

cactaaaaac aaaaatttac ncctgaaaga aattgcaggc a

41

<210> 2250

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 2250

ttcatgacag atcagatggt ncttttatgg atttaciaag a

41

<210> 2251

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2251

ttcatgacag atcagatggt cttttatgga ttacaaaga

40

<210> 2252

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 2252

tttccttctt caaaccccc nagactagga gaaggtctgt c

41

<210> 2253

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2253

gggacggaca gaaaaagacc nagtttctgt tgagccaaag a

41

<210> 2254

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2254

tattttttca attaaataaa ngagtttttt gtttctaaaa g

41

<210> 2255

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tg

<400> 2255

gggccgagta tgcacactga ntgtgggaaa gttagagaag a

41

&lt;210&gt; 2256

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2256

gggccgagta tgcacactga tgtgggaaag ttagagaaga

40

&lt;210&gt; 2257

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 10 to 13 repeats of t

&lt;400&gt; 2257

atcttcccca cctttcacta nggtcttcta tggggtaaag g

41

&lt;210&gt; 2258

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> modified base

<222> 21

<223> n represents 11 to 13 repeats of gt

<400> 2258

gtaccctgga cctcccagaa ngagagagat gtccttcct g

41

<210> 2259

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2259

ataggggcag aaaagacaca nccaaaagtt ctctctcact t

41

<210> 2260

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion



<400> 2260

catgatcaga gtaagggggg nttggaggat ggggagggga g

41

<210> 2261

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 2261

ggagagggaaa tgatgttagt ncctcctgta aataggccca g

41

<210> 2262

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of t

<400> 2262

tgctcttttg tgggtaatgg ncctcttcca ggagaagaaa a

41

<210> 2263

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 2263

cggggtggag ggttgggagg nctcatttgt cattatagat g

41

<210> 2264

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2264

cggggtggag ggttgggagg ctcatattgtc attatagatg

40

<210> 2265

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tt or deletion

<400> 2265

tgctgccctc atcttctctc naaactagtt ctgtatttct c

41

<210> 2266

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 7 to 9 repeats of a

<400> 2266

tataacctga cttttttttc nggattgctt ttttaaacad a

41

<210> 2267

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of t

<400> 2267

gctgaattag ttcccttggg nagttaactc ctgatttttg c

41

<210> 2268

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 10 repeats of a

<400> 2268

gataatcaat gctgtaaggg ntggcattag agatccagac c

41

<210> 2269

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gt or deletion

<400> 2269

taaaaccgtc ttgtttgttt nttacatggg ttttagggcc c

41

<210> 2270

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2270

taagcagcta tcacttaaca ntacaaaacc agagattatc a

41

<210> 2271

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 2271

ccttgaccaa agcctggggg ncagccattc cccaaccct c

41

<210> 2272

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2272

ccttgaccaa agcctggggg cagccattcc ccaaccctc

40

<210> 2273

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2273

ataaaaagag ggggaaaaaa ngaaggcagt cgctgcaggg c

41

<210> 2274

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ct or deletion

<400> 2274

gtggaccct gagactgact nttccagatc ttgttagggt t

41

&lt;210&gt; 2275

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents g or deletion

&lt;400&gt; 2275

actctggaat ggcgggggna taagaacaca gccccagca

39

&lt;210&gt; 2276

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents a or deletion

&lt;400&gt; 2276

gggccccacc tgctgaagag nggggggggtg gggtttgccc c

41

&lt;210&gt; 2277

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2277

ttttctccaa taatacaagt ngaggatcgg gttaaaatag g

41

<210> 2278

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2278

tgtagcctat tcctataaaa ntgcaccatt gcttccatt a

41

<210> 2279

<211> 41

<212> DNA

<213> Homo sapiens



<220>

<221> modified base

<222> 21

<223> n represents c or deletion

<400> 2279

tttaattggc ccagccatgc ntttggtggc ttttgcatt g

41

<210> 2280

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaag or deletion

<400> 2280

catcctgctg aaggagaaag ncaccaatgg cccaagccct a

41

<210> 2281

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2281

agaatgttgg cccctcccc ytcctgcatc ctctgcagaa g

41

<210> 2282

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2282

aatgttg gcc ccctccccct yctgcatcct ctgcagaagc c

41

<210> 2283

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2283

ggccagt tag tgcgggcag rtcgccccaa tagcagcgtg c

41

<210> 2284

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2284

agagctgggg tcgtgcctcc rgctgggcaa ctgcctgtct c

41

<210> 2285

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2285

ctctgtcccg tcccctgccc rgtctcacca tggccttctg g

41

&lt;210&gt; 2286

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2286

ccccgggcca aggacctccc rttccaggca tccaggctgt c

41

&lt;210&gt; 2287

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2287

cagcttggtg gaggccgctg rggacctggc ccaggaggta c

41

&lt;210&gt; 2288

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2288

gccggagggt cacggaaact rtttgaagaa gtaggagtta g

41

&lt;210&gt; 2289

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2289

tgcgaggat cagaggcaca ygcaggagca aggcagaggg g

41

<210> 2290

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2290

accggacctt cgaggagctc rccctgctga gggatgtccg g

41

<210> 2291

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2291

tttttttttt tttttttttt wtaagagatg gagtctcact c

41

<210> 2292

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2292

gttgcccagg ctggactgca rtggcgagat cttggctcac t

41

<210> 2293

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2293

cccaggctgg actgcagtgg ygagatcttg gctcactgca a

41

<210> 2294

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2294

gagatcttgg ctactgcaa yctccgcctc ctggattcaa g

41

<210> 2295

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2295

cgcacacgct gatgtggggc rcctggtggg cacgctgggc c

41

<210> 2296

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2296

gagtgcacgga ggtgagggcc ygtccacctg cggggtctgt t

41

<210> 2297

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2297

cctgggcccc ggccacgtgc rcatcaaaat ccgcatggac a

41

<210> 2298

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2298

caggctgcga actttgcacc kttacaccac tccacgtgac c

41

<210> 2299

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2299

cccttcctgc tcagcgccgc rctgctgggt ctggtgctca a

41

<210> 2300

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2300

ggtgcgctgg aggggtgacag rcaggggcgg ccccacgtgg g

41

<210> 2301

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2301

ggggcgggccc cacgtgggtg gcgccccccag gccaatccag

40

<210> 2302

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2302

cgttgctct cacagctggg rgacatcctc ccctacagcc a

41

<210> 2303

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2303

cgagggcgcg cagtggcaca cgtgggcacc cggcctacgg

40

<210> 2304

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2304

ggcggggctc cgggccgggt sgcacctgct ttgcgggagg c

41

<210> 2305

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2305

ctggacccaa agggtgaggc ctacgaggct taatagctgg

40

<210> 2306

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2306

tcccgagct tttataggcc ycgcccagc aggtcccgga t

41

<210> 2307

<211> 41



<212> DNA

<213> Homo sapiens

<400> 2307

caccccatct ctgcagtgt rgtagaagag gcaccgccc g

41

<210> 2308

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2308

cccggcctga gtcctggcgt tccgttcgca gcctggagaa

40

<210> 2309

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2309

cgagacagta agagttgggg rtagacagag gttcccctgg a

41

<210> 2310

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2310

ctgctgggag accgtgtggc ygtggtggca ggtggccgct t

41

<210> 2311

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2311

gggtggggcg tgagccgggg ytcctgaag caccctttg t

41

<210> 2312

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2312

gggatctccg acaccagcct sgaggaggtg tgaggcctgg g

41

<210> 2313

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2313

ggagctctgg tggctcagat rtcccttggg aaggcctggg g

41

<210> 2314

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2314

gctggcctag acgtaaccct rcggctcaag atgccgccac a

41

&lt;210&gt; 2315

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2315

cccagcctgc cagtgtagcc rgcccgggtgc ccggcgcctg c

41

&lt;210&gt; 2316

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2316

ccccctggga gctctcccgg cccccgggcc ctcagctccc

40

&lt;210&gt; 2317

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2317

ctgcctgcat ggccccacag rtacggaggc ttctcgctgg g

41

&lt;210&gt; 2318

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2318

caaggagcag ctgtctgagg stgcactgtg agtccctcca c

41

<210> 2319

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2319

ccactgcttg ccactgccct rtctggcccc ttgtaggcag g

41

<210> 2320

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2320

cagtactttg ggaggccgag rcaggaggac tgcttgtggc c

41

<210> 2321

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2321

ggtgagccgg atcttgaaac rggctcttcct tatcttcccc c

41

<210> 2322

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2322

ggcccactca cctttctgaa rgacctgcac tctcccaggt a

41

<210> 2323

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2323

ctctacctcc cacacgcgga scaggccctg agacaccct g

41

<210> 2324

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2324

ctgagcccc ggcgccccca yccccagcgt ggcccgggaa c

41

<210> 2325

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2325

gtggcccggg aaccagtg ygcgcacctc agcatgggat a

41

<210> 2326

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2326

ctccttgact ctgccttctg yggccctgcc cacttgctcc t

41

<210> 2327

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2327

tggccgttcc cagtttgcag ycgtttact gcctcttcca t

41

<210> 2328

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2328

cacactatgg ccctgcccc yacccatccc agctccaccc a

41

<210> 2329

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2329

actatggccc tgccccacac ycatcccagc tccacccaca c

41

<210> 2330

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2330

tggccctgcc ccacacccat sccagctcca cccacaccat g

41

<210> 2331

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2331

ccctgcccc caccatccc rgctccaccc acaccatggc c

41

<210> 2332

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2332

actcatgctg gctccacca yaccatggcc ccgccccata c

41

&lt;210&gt; 2333

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2333

tgccctgccc catgccatt rtgcccctgc tccacactca a

41

&lt;210&gt; 2334

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2334

gaagcgctct gctcgcgcct rgccatcatg gtgaatgggc g

41

&lt;210&gt; 2335

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2335

ggcgcaggac caggaggcgt sagccggggg ctctgggtgg a

41

&lt;210&gt; 2336

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 2336

ctgggtggat ttagaagaca yaatcaggtg tgcgttggag t

41

<210> 2337

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2337

agttagggga gggcctggtt rgtgggcggg gccataggaa a

41

<210> 2338

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2338

ggcggggcca taggaaagtg sggcgggggt atttattgtg t

41

<210> 2339

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2339

tggcggccga gttccctggg kcgagctgc gcgaggcaca t

41

<210> 2340

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2340

ctgcgcgagg cacatggagg ycgctgcgc ttccagctgc c 41

<210> 2341

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2341

acggcgccgg ggtcgggctg sgggaggcag gctgggggcc a 41

<210> 2342

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2342

aaggctggag agaagccgtg stggtgaaac cgtgtgcatg t 41

<210> 2343

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2343

caagctgagt gtgcacatac rggccaagtg gcgattcata g

41

&lt;210&gt; 2344

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2344

cttacaggag cccggtgtcc yggagcacag gccagggccg g

41

&lt;210&gt; 2345

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2345

cagcaggag acttggggag rggggagaga gttcacactg c

41

&lt;210&gt; 2346

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2346

agcagggaga cttggggagg rgggagagag ttcacactgc g

41

&lt;210&gt; 2347

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2347

cctcgacctg acccacttca yggggctgca gggcgggtga t

41

<210> 2348

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 22 to 26 repeats of t

<400> 2348

cgtgaactac cacgtcctgc naagagatgg agtctcactc t

41

<210> 2349

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of g

<400> 2349

ggggactctg agggctctggt nactctgagg gtctgggggc c

41

<210> 2350

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 6 to 7 repeats of c

<400> 2350

ccccctggga gctctcccg nggccctcag ctcccccttc c

41

<210> 2351

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 12 to 14 repeats of a

<400> 2351

agaaagagaa agagagaaag ncagaaatgt gctttgggtg a

41

<210> 2352

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2352

cctgggcttc agcaggggcc ycacacctgc aatgggtgcc t

41

<210> 2353

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2353

cctcacacct gcaatgggtg yctggggaga ggggtgcagat g

41

<210> 2354

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2354

tccaaagccc agatttggtg yttttggggc tcttttggaa t

41

<210> 2355

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2355

ctggtggagg aagaaaggta rggagggcgg ctgctttgtg t

41

&lt;210&gt; 2356

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2356

agctcaggag gtgtctggaa ygccacacag tgcaggagtt t

41

&lt;210&gt; 2357

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2357

aattctcctt ctcaacttaa rgaaatattt tatagaaaaa t

41

&lt;210&gt; 2358

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2358

agagcctgca atgggccgcc ragggacctg cccatgactc a

41

&lt;210&gt; 2359

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2359

gaggggttga cagacaggat rtgtctgctg tgttccagct g

41

<210> 2360

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2360

tgacagacag gatatgtctg stgtgttcca gctgctggtt t

41

<210> 2361

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2361

ccctctctgt gccactgtt stcccaacac cagcctgttc t

41

<210> 2362

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2362



tataatagat tcctagcaga raacataatt gtgagaggaa c

41

<210> 2363

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2363

gctttcagag cccattcaca yaagggtctc attttattag g

41

<210> 2364

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2364

ccaggtctgt gggatttcag rccaaaaagg agcgtagcaa g

41

<210> 2365

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2365

gggttaaata ttccgggcag ygccaagtca gattatctgt a

41

<210> 2366

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2366

gctaaagtgc atggaaggca ycatgaataa atcctttcag g

41

<210> 2367

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2367

tcacagcaga ttcatgagag wtgaatgttt agccgccatg t

41

<210> 2368

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2368

agatgctccc ctccagccag yacattttct ccctgtgagc a

41

<210> 2369

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2369

acctgcatgg tgggtgcccc sctgccttcc tctactgcct t

41

<210> 2370

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2370

tgggtcagat taaatatatc ytgaaggact aaaccgtaaa a

41

<210> 2371

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2371

ttgctcacat tgtgaaaaaa sgcaaaaaga tgggttttca g

41

<210> 2372

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2372

gcctgagagc gctggcagta rgaagggtcg ccagtgtgga c

41

<210> 2373

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2373

tctggtttag agaggaaaat rggcagcatc attttgtcac c

41

&lt;210&gt; 2374

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2374

gggctctctt ggagcccttt ktctctccca gccctgcgc t

41

&lt;210&gt; 2375

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2375

gggatttcga atctcaacac yctgagctct gtgctttccc c

41

&lt;210&gt; 2376

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2376

gagttgtcct ccaagagaat ytttgatgg ttccttttct g

41

&lt;210&gt; 2377

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2377

ctgggggttgg tgggagccac rgtctcacac ctattggcag g

41

<210> 2378

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2378

ctattggcag gtcgtgaaca ygtttcttgg atttgcaaat a

41

<210> 2379

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2379

acatggccgg cttcccttct ycctcggaat ggcctggaat t

41

<210> 2380

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2380

gccggcttcc cttcttcctc rgaatggcct ggaattcgat c

41

<210> 2381

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2381

acaagactta gaatttgacc rtgatitttaa aactattcta a 41

<210> 2382

<212> DNA

<213> Homo sapiens

<400> 2382

ttcttggatg tggccatgca ygggggcaag ggtttgatga g 41

<210> 2383

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2383

atcatgtggt ttgggggaaa sctgggaccc cacttggtac a 41

<210> 2384

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2384

caggaaggag acagctgctg stgctgctta gagttaggcg c

41

&lt;210&gt; 2385

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2385

ccttcagttg taataggcag raggagcgca cgaggaggct g

41

&lt;210&gt; 2386

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2386

attgtttctc ctggttttgt ytgtgttgac tttcccttta a

41

&lt;210&gt; 2387

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2387

cagatccctt gggtgctggg yaggtagtag gagaggtttt t

41

&lt;210&gt; 2388

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2388

aaacagggct tgagtcctcc rtaaggga ggagacctc c

41

<210> 2389

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2389

aggagacctt cccacatcct rgcaagaatt cttcttttt c

41

<210> 2390

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2390

cagactaaat gcacaattct rgattgagct gactgtattg a

41

<210> 2391

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2391

tgtaaaagat ggagaagaac rcagtagtcg cttgctgtga g

41



<210> 2392

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2392

tgtgactcat ggcctctgcc rggggactgg gctggccctg c

41

<210> 2393

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2393

tgaaaagaaa atggatgagt rgaaaccaaa agagagaaaa t

41

<210> 2394

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2394

aagaaaatgg atgagtggaa ccaaaagaga gaaaatgtgg

40

<210> 2395

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2395

aagcagaggc ttttccaccc rgagactcaa gaagctgctc c

41

&lt;210&gt; 2396

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2396

gtggtgaagt agagctgagc wcacggggga gccctccatc c

41

&lt;210&gt; 2397

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2397

atggccttgg gccactgcct rctgtgcccc gagccgagct t

41

&lt;210&gt; 2398

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2398

cagcaggctc cgtgctgaag ycacagcaag ccaggccctt g

41

&lt;210&gt; 2399

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2399

agccaggccc ttggcctgcc rgagctggaa gacccagaac a

41

<210> 2400

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2400

gcctcccagg agtagctaca ygggacccga aggcagatgg c

41

<210> 2401

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2401

ggcagcctgg gctgccgaga ycctccctgg agcgcccgcc g

41

<210> 2402

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2402

cgcccgccgg gaagccccag rggggctgga gctacaagtg g

41

&lt;210&gt; 2403

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2403

ccaggggggc tggagctaca rgtggccttg caggtttttt g

41

&lt;210&gt; 2404

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2404

ccagctcatg ggcaggggtg yggagggaaa ggcacccaca g

41

&lt;210&gt; 2405

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2405

caccagagcc actcagtcgg ycaagagcgt cgcccagtgg t

41

&lt;210&gt; 2406

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2406

gaagaccagc agtcgatgcc rgctgggaag agggctctgc c

41

<210> 2407

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2407

accaccagc cttttccaga yagccttcca gaagctgttt c

41

<210> 2408

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2408

gagccgctgg agtaggggcc rcttgctatg gctcccaggg g

41

<210> 2409

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2409

gaaaccacca gaaattgtgc rtcctctcat gtgtccattc a

41

<210> 2410

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2410

tattgactgg acaccttctc ygtatggggc actgggctag g

41

<210> 2411

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2411

atcagtaacg ggtcactaac rgatgctgct gagtggggca g

41

<210> 2412

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2412

atttcatttc ctcaatgtcg yctgaccaga gagcgggagg t

41

<210> 2413

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2413

tggcccactg ttgagggtgt rggtgaccag aggggcctgg a

41

&lt;210&gt; 2414

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2414

tgtgtcctgg tttgtggctt satctaggag gtgtgggtggc c

41

&lt;210&gt; 2415

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2415

ctggaggaga agacaggata agtctaagac gtgctgtcac

40

&lt;210&gt; 2416

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2416

aggataaagt ctaagacgtg ytgtcacaga gttcagggtc c

41

&lt;210&gt; 2417

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2417

gcttccaaag gccgcatccg kgttgttctc tgagccgagg a

41

<210> 2418

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2418

atccgggttg ttctctgagc ygaggacggc tttgccaacg c

41

<210> 2419

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2419

tggctgacag tgaacacagc rgctgcttct ccagaacttt a

41

<210> 2420

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2420

atgcagagtt tcagaagagg sagactcagg aagagtaagg c

41



<210> 2421

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2421

acccggagag ccatggcagg ccaagtgttc tggacgttgc

40

<210> 2422

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2422

gcctctcagc tgatggctgc rcagtcagat gtctggtggc a

41

<210> 2423

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2423

ctcagaacta catcgagtga rgtcagtggt gaaaacgccc a

41

<210> 2424

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2424

atggggccca cagccctgcc ycagaagcag ctttgggtctc g

41

<210> 2425

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2425

gggggaagag cttgggaacc rtgagggctg ttaggctgca a

41

<210> 2426

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2426

tgaagggtga actggagtag stgaggattc tgcagttgac g

41

<210> 2427

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents caccaggcagcagactctgatgaggaggggaggggg

<400> 2427

ccgatgagga ggggatgggg ncaccaggca gcagactctg a

41

<210> 2428

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2428

ccgatgagga ggggatgggg caccaggcag cagactctga

40

<210> 2429

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 2429

catgaacttg cctgaccata nccctgtgag gagctagggc t

41

<210> 2430

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2430

catgaacttg cctgaccata ccctgtgagg agctagggct

40

&lt;210&gt; 2431

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2431

tcatttgaaa gtgggtatgc rgtttaaaac tgacagttca a

41

&lt;210&gt; 2432

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2432

agctagtcac aaataaatac rccagagtag taaggaagag a

41

&lt;210&gt; 2433

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2433

cctcatgaat ggtatacatg wcccaacata tctctttcga t

41

&lt;210&gt; 2434

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2434

acagtgggtcc ctttgggtgc rtatacccaa atccctgcat a

41

<210> 2435

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2435

ataggaataa ttgagaacag rgtctgaaga actctgcagg a

41

<210> 2436

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2436

ctgaagaact ctgcaggaaa ygaaaatagt tccctgcttt t

41

<210> 2437

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2437

tgaagaactc tgcaggaaat raaaatagtt ccctgctttt a

41

<210> 2438

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2438

tcacttaagg ctttgcaggg kgtctaggac acagaaagag a

41

<210> 2439

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2439

aaagtgtctt taaaatttcc rtcttgagtc agtgagctat t

41

<210> 2440

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2440

tcttgagtca gtgagctatt kaaattcaag caataagtta t

41

<210> 2441

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2441

ctgtttggga acagcaactc atcataggca gagagaaagt 40

<210> 2442

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2442

atttcaaacc tgtttcacaa rttgttaagc tcatcttaag g 41

<210> 2443

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2443

gaaggtgcat aacaacttcc kacataaagt ctggagctat a 41

<210> 2444

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2444

aaatgaagct gctcattgcc rcacatttaa aaatggactt g 41

<210> 2445

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2445

ctattgcttt tctgtctgca kaaagataaa aactctccag a

41

<210> 2446

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2446

atgtcgaagt ttttatccca rtgtcacaag gaaacaccaa t

41

<210> 2447

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2447

tgtaaaaaga cagcttttta rtttacctac agtgaacctc a

41

<210> 2448

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2448

caaccctaaa ttggagggcc ygggcgtggt gattgagaaa g

41

&lt;210&gt; 2449

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2449

gttgacagac ttttatagtg gggacactga cctgcatgca

40

&lt;210&gt; 2450

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2450

atgtatgtac cacgtcttca yattcttaaa ggatgaccct a

41

&lt;210&gt; 2451

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2451

ggcaaacttt cgtgagtata rgagagtata agtaagcgtt t

41

&lt;210&gt; 2452

&lt;211&gt; 40

<212> DNA

<213> Homo sapiens

<400> 2452

tgacggtgag agaaaactta agttctcagc agctcttcgg

40

<210> 2453

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2453

actattctag ttgattctag rttgtcaata caacacactg a

41

<210> 2454

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2454

tcctattctg ttttaataaa rgcattgaat ttaggtttgc t

41

<210> 2455

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2455

gtcaggctga actagagcaa rcaatctaaa ggcaagaata g

41

<210> 2456

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2456

ttcatttttg tagcaccagc ytggtattta ggtatctttc t

41

<210> 2457

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2457

gcacttggac ttgctttgc yacatacttg cattgctctg c

41

<210> 2458

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2458

tatactaata aatggtgtgt wtaagttttt atctctaatt g

41

<210> 2459

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2459

gacgccttatg tgcagcctat kttgatgtct ggaaaggctg a

41

&lt;210&gt; 2460

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2460

ccctgagggc tgaggtatct rgattatttc cagacttgct a

41

&lt;210&gt; 2461

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2461

tgtgagtagg tctttgttct rggaacgggg ctgtccagca g

41

&lt;210&gt; 2462

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2462

tgttcttcaa ggaaagcccc ygtcaaagaa ggaaaagaag c

41

&lt;210&gt; 2463

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2463

atgtcttttag tcttgcctat kggtgaagtc agttgcacct t 41

<210> 2464

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2464

tatgcagtta catggacaga yacaacattg gagaccgagg g 41

<210> 2465

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2465

gctctgataa ggaattgttt ytttccttca tttcttcctg c 41

<210> 2466

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2466

ttactcaagc aggcctgact yttagtattt gctttttgta g

41

&lt;210&gt; 2467

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2467

ctaattgaaaa caaacaagaa ygaaagattg tcaactgtaaa t

41

&lt;210&gt; 2468

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2468

taactctttg gaaacttctt raaattttaa actgtttacc t

41

&lt;210&gt; 2469

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2469

ccaggggcac tgaatttttc ygagcctacg ttttctcatc c

41

&lt;210&gt; 2470

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2470

gccgcatagt catgtgttgt wgtttttaaa ttaacttgga a 41

<210> 2471

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2471

aacaagaaac acttgaataa rttgagaaaa aaccccgttt t 41

<210> 2472

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2472

tgagtagctg ggattacagg ygcccaccac cacacctggc t 41

<210> 2473

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2473

catcaattca ggtcaagaaa yagaagattg tagcacacaa a 41

<210> 2474

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tcac or deletion

<400> 2474

gttgggatgg ctacactcac naaagcctga tggcccgttt c

41

<210> 2475

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2475

ctgctagttt attttttttt naacattttt aatttatgtt t

41

<210> 2476

<211> 41

<212> DNA



<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of t

<400> 2476

tcaatatgtt tctgcttacc naatgggttac ttaatacctaa t

41

<210> 2477

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 7 to 8 repeats of a

<400> 2477

aaacacttga ataagttgag nccccgtttt cacataatgt t

41

<210> 2478

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2478

ggcctgggtg tcccatgttc rgaaagtcct gcaccagtgg g

41

<210> 2479

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2479

gaacacagaa ggtattctga ragggcattg acccccatcc t

41

<210> 2480

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2480

tggtgtcct catgaagtcc ytggcacagg ggggccgtac c

41

<210> 2481

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2481

ggcctcctag gggtagagat ytcaccgtcg cctgccttc c

41

<210> 2482

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2482

cttgcccttg ggaagtgagt rtgaatctaa actgagctct c 41

<210> 2483

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2483

ccccagaggc attgcaacca rtgggtgcta ggaagaacct a 41

<210> 2484

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2484

aggtacacaa cttaatggta saagattctc tgtagacctg g 41

<210> 2485

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2485

acgtgagacg agataagtga yggatcatatg gccagggagg a 41

<210> 2486

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2486

acgagataag tgatggcat rtggccaggg aggaagggga c

41

<210> 2487

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2487

gggggacagc ttgaacaaga rtgtggaggc aggatggaca c

41

<210> 2488

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2488

gagtgacagg cacatacatg gaacaggcca tctcagccct

40

<210> 2489

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2489

aactcagatt ctcggcacct ycagcagctg gcttcgccaa c

41

&lt;210&gt; 2490

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2490

ctgaaattat atgcaaattc ygtagcttta taggaagcag a

41

&lt;210&gt; 2491

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2491

ttgtgtagga agctgataca ktaatttgac atatgagatg t

41

&lt;210&gt; 2492

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2492

ccaagaaact tcagctttct yttcacttaa atataggaaa c

41

&lt;210&gt; 2493

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2493

atatccagaa acagatggta ygtgcagaac aggttgtaca g

41

<210> 2494

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2494

tggatgatta gactgactct sagaatattg ataagccatt t

41

<210> 2495

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 13 to 16 repeats of t

<400> 2495

tttgtctggg ttggttgggg ngagactggg tctgactctc a

41

<210> 2496

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 10 repeats of t

<400> 2496

tacatttgtc aaaatttata ngcagataat catttcatct c

41

<210> 2497

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 14 to 16 repeats of t

<400> 2497

taaattcaca tgattctgta naggatcctc ctgactggca g

41

<210> 2498

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 13 to 17 repeats of t

<400> 2498

tctttcaaac ttatatttgc ncatagtttc atgtttgatg a

41

<210> 2499

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 2499

ttgctctggt tcaaattctt nattcatggg ccagcagctc g

41

<210> 2500

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2500

ttgctctggt tcaaattctt attcatgggc cagcagctcg

40



<210> 2501

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 9 repeats of a

<400> 2501

agtgtagatg gacctcgggg nctagttaag gaaaagtaat a

41

<210> 2502

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 9 repeats of t

<400> 2502

ttccaatttt ccattgttac ncttgccaga ttactcctga a

41

<210> 2503

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gcagtattactgtagt or deletion

<400> 2503

tcctctgcat tttggcttct natttgtcat tttcaaatta a

41

<210> 2504

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 13 to 14 repeats of t

<400> 2504

ttttttggtt tctttcttct naatcttgga ggaatctttt t

41

<210> 2505

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 10 repeats of t

<400> 2505

gattagaaat ccaggttaaa ngttttgcac aaaaatatta c

41

<210> 2506

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 10 to 11 repeats of t

<400> 2506

taaaatttaa tcaaaattga nctcttagtc ctcaaaccct t

41

<210> 2507

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2507

taaatggaga aaataacacc racctgatag cattgttgtg a

41

<210> 2508

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2508

aaactcccca agcatgctca ctagatcctt accctaggtc

40

<210> 2509

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2509

gccctgcccc cactcccaga sttgcgcccc tccagcccct t

41

<210> 2510

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2510

cctccccag aggagctggg yacactgggg ccttgtgttg t

41

<210> 2511

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2511

attgtgtgtt ggcatactgc ycacatggaa ggatgctcta g

41

<210> 2512

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2512

ttttccttag gaagaaaaac rccttgctgt tttatgcatt t

41

<210> 2513

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2513

aaaacattca tgggggatta stgctggcta cgtcagagtc a

41

<210> 2514

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2514

gcgctgccac agatcaggcc raggtggggg acagaaatgc c

41

<210> 2515

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2515

cccagaattc tgaatacagc rgcgatgacg ggactacgag g

41

<210> 2516

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2516

aacagatcca caggaccaga agcaaagggg aggaacatgc

40

<210> 2517

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2517

atgcagggaa ggggcttggc rcaaaactgt caactgagat a

41

<210> 2518

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2518

atgctccctg gtccactttc rctttgagtt tcaggtagct g

41

<210> 2519

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2519

ccatggtctg caggggtcct kcatgctcag gggattgggg t

41

<210> 2520

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2520

agaggacaga ggaaagagga cacctggaga actgggcgcc

40

<210> 2521

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2521

aagaggcttc cgagctgtc ygcaggttaa atcctgggggt g

41

<210> 2522

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2522

caggttaa at cctgggggtgc raggaatggt tgttcagctc c

41

<210> 2523

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2523

ataactggta caggtttact sgtgtctaca ctggcagaga a

41

<210> 2524

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2524

gttttccct tgccttgct ncattttcat cacctcattt t

41

<210> 2525

<211> 41

<212> DNA

<213> Homo sapiens



<220>

<221> modified base

<222> 21

<223> n represents 12 to 15 repeats of t

<400> 2525

cacactgccca cacctggcta nggatttttag tagagacggg g

41

<210> 2526

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2526

tccagcgtgc cgaccggccc sgcagcgcct ccatccctcc g

41

<210> 2527

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2527

gcgtccaggc gcgcgcgcca ractttggag ggagaagggg g

41

<210> 2528

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2528

agagaagaat ggggcagagc sggagcagcc aggggaggtg a

41

&lt;210&gt; 2529

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2529

ggatgagcac tgcccagctg rtccctgccc accttccaca g

41

&lt;210&gt; 2530

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2530

tccactgcag aggggacaca stgaccagga cggaagttgg g

41

&lt;210&gt; 2531

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2531

gggctgtcca tctttgtacc yctggttcca tcccagtgcc t

41

&lt;210&gt; 2532

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2532

ccttttcttc tctaaggcct raagagatga cagaatgctg c

41

<210> 2533

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2533

agcgcgtgga ctccacagcg rrgtgtgggg tggcccctgg c

41

<210> 2534

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2534

gacacgttc agccctctgt stctattgcc ccaaactctgg c

41

<210> 2535

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2535

ctgtggcttc cctgggccct rggaaattta tcaactgaggt t

41

<210> 2536

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2536

gagtggggca ctgctggaag sttctggttc ctgctttgtt c

41

<210> 2537

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2537

aaacacactg ggccaccccc rtccccgcac tgtgactaca c

41

<210> 2538

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2538

ctgagggcct gtcctgcagg kttgatgtgt ctgaagaggc c

41

<210> 2539

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2539

gtctgaagag gccccgagaa yagaaatcta gaacctgcca g

41

&lt;210&gt; 2540

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2540

cagtcacgaa gcagtgtcac ycaccagagg atgaagaact g

41

&lt;210&gt; 2541

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2541

cttgcatctg gtgtaggtgc ytgggggtag cgtgcccagg a

41

&lt;210&gt; 2542

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2542

gacaggaacc ccaccccgag kgatgtctgg ccctgtgacc t

41

&lt;210&gt; 2543

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2543

gcttgcaatt ctgattcatt ytgagtcac tggctctttg t

41

<210> 2544

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2544

ccctggaagg gcctcactgc rgtgactcat taccagcat g

41

<210> 2545

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2545

accacacag catgaatggg sccagcccca gcctgcccgc t

41

<210> 2546

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2546

gtagccacag ctggggctgt sgggtcaggg catggcaagg g

41

&lt;210&gt; 2547

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2547

ggatgtgtag ggtttgggct yggccttaag ggatgggtgg a

41

&lt;210&gt; 2548

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2548

gatgctggtc aggcattgtc rttgggatct ttaacaccac c

41

&lt;210&gt; 2549

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2549

tatttagcat gtgggtttca ctttctgttt tttcaaaggg

40

&lt;210&gt; 2550

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2550

gacttgggcc acgtccttgg scatgaatct tggctctatgt c

41

<210> 2551

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2551

agcaagaaag tgtgctcccc yacagcccca ctcaggcata a

41

<210> 2552

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2552

agcacacatg gagctttccc rcagtggggtt tcagcgctcc c

41

<210> 2553

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2553

agggaagccg aagcctcact ygctggggct tgcctggcct c

41



<210> 2554

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2554

tgtgaagttt tgcccacagt yggtaggcat ggtagcacc g

41

<210> 2555

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2555

gccactcatg tatggagcaa ytagcttttt ttcttcctt t

41

<210> 2556

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2556

ccatagaaga ggctgggcct kaggaagcca gggaagcagg a

41

<210> 2557

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2557

ggtgtgggga ggccagcagg rgtgtgggcc tcagcgggga g

41

&lt;210&gt; 2558

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2558

ctctggtgtt tgctgtcaat rtgcagagtg ctggacaaaa c

41

&lt;210&gt; 2559

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2559

ctggaacagc aacttaaaaa wagaaatagt ccctggaagg g

41

&lt;210&gt; 2560

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2560

gggtagccag ggcagctccc ygacccgcac ctgcctttt

39

&lt;210&gt; 2561

&lt;211&gt; 39

<212> DNA

<213> Homo sapiens

<400> 2561

gcagctcccc gacccgcasc tgccttttca cccctctcc

39

<210> 2562

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2562

gccattctag atgcgagtc ygacttttggg gtgcttgca

39

<210> 2563

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2563

cgagtcccca ctttggggyg cttgcattct gggaaggga

39

<210> 2564

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2564

ctacagctgt gaaaggtag rcaagatact taacatttct g

41

<210> 2565

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2565

acacctcaga ggagcctgtg ttaacatttg taggattatt

40

<210> 2566

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2566

aggcctcatc tggggtaggg scaagaggaa agtacagagt g

41

<210> 2567

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2567

ctggaattcc tccttagggc yctgggaaga gtattgctta a

41

<210> 2568

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2568

cttaacgcag gatgtgctgg rtgttttggt tcgggctttt a

41

&lt;210&gt; 2569

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2569

gcttggtgtc tttcttggtt yatggctgtg tttttgcttt t

41

&lt;210&gt; 2570

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2570

ccgagggtc cccagctctg yttctgggtt cctggacaat t

41

&lt;210&gt; 2571

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2571

ctgtcagata cggccattg yaaaccaga gggctgcatt t

41

&lt;210&gt; 2572

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2572

gttcccatg tggaggtcgg rggggctggg actggggagg g

41

<210> 2573

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2573

ggccctgcta atgtggacag yagactttat cctccttct t

41

<210> 2574

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2574

ccagatgtgc atagaagcca rtctctgtca catacaccgc a

41

<210> 2575

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2575

taaagcaaat ttaggctttt rtccttctgc aatacatgca c

41

<210> 2576

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2576

ggaaggagct tcagcaggag rtccttccca gaaggttgat t

41

<210> 2577

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2577

tcatacctgt aatcccagca kttggggagg ccaaggtggg a

41

<210> 2578

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2578

ccattcccaa agtcagaaag ygaagccaga tctcaagggc t

41

<210> 2579

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2579

caaaagcaca aagcagaatt sgcaacttca cttgtctca

39

<210> 2580

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2580

cagaattggc aacttcacwt gtctcaagag ctccaagat

39

<210> 2581

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2581

ttccaaggct acagacatgg ygccatcctc acaggcctag c

41

<210> 2582

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2582

atttcatgtc tgcattgtac ragacacccc ttcacggca

39



<210> 2583

<211> 39

<212> DNA

<213> Homo sapiens

<400> 2583

tacgagacac cccttcacrg catacactgc catggtatg

39

<210> 2584

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2584

agacaggagt gttgggccag yggtcagggg gcctggggat g

41

<210> 2585

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2585

acctcttaaa gtatttgagc yggtgcctgt catcccaacc t

41

<210> 2586

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2586

cgggagcagg aaaaaaaaaa ngaataagaa gaaaagaggc t

41

<210> 2587

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents at or deletion

<400> 2587

gctcatgctc acagccactc ngtatggagc aattgccttt t

41

<210> 2588

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2588

ctgggtggag tggggtggca yggagttgaa gacccagtcc t

41

<210> 2589

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2589

tgtgccggcc ccagccctga scatgcatcc ctttggggac c

41

<210> 2590

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2590

accacccttc tgcgtagcac rgagggtggg tggcatcaag g

41

<210> 2591

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2591

tgtaggctga ggtagcccc atccagtcca aagcccaccc

40

<210> 2592

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2592

gaatgcggaa gtgctctgtg rgcaccacc atgctccggg c

41

<210> 2593

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2593

gatctggggc ggagggtaca yggggctggc gctgggtgaa g

41

<210> 2594

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2594

tggtgtaa ttttttttt ngcttcaaaa atatagtatt t

41

<210> 2595

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ttc or deletion

<400> 2595

tgaactcggg gttcagggtc nctgtgaaca ctggttttga a

41

<210> 2596

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2596

ggaaatgctg gctaaataaa nggtatcaaa ctaactctga a

41

<210> 2597

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2597

tcgttgatg gtagtattgt ktgaacaaca gaagaaattc a

41

<210> 2598

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2598

ccaaatgcat gccagcagag ygtggcagga aggtacacaa g

41

&lt;210&gt; 2599

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2599

aaggaatttg cataagacag ytatgcaaaa tggagctgga g

41

&lt;210&gt; 2600

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2600

cagaagatct tactctctaa kgaagctgga taacactttt t

41

&lt;210&gt; 2601

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2601

tttactttgg taatcatact yatcaaatgt gtgttttagac a

41

&lt;210&gt; 2602

&lt;211&gt; 40

<212> DNA

<213> Homo sapiens

<400> 2602

aaaccacata ctatttgatt tgatgagaat cacataacca

40

<210> 2603

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2603

tatgattcaa ctttcaaag wgtattgtga tatgaaatag a

41

<210> 2604

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2604

caacttctgc catcttattg ratctgtact tacctagtaa t

41

<210> 2605

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2605

tggttaagagg ctttaagata caaatgctca gctttcagga

40

<210> 2606

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ctt

<400> 2606

tactcttaaa attaatcctt nttattataa gtatacagtc t

41

<210> 2607

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2607

tactcttaaa attaatcctt ttattataag tatacagtc

40

<210> 2608

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2608

aattacgact aacgttgagg rcgaactctt tgctaaataa a

41



<210> 2609

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2609

cgccgcgccc ccgccacagc rcccaggcgc ccgcagggca c

41

<210> 2610

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2610

tggccccaag ggaggcactt rgccctactg ggcatgcgcg c

41

<210> 2611

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2611

ttgggccgct gaccccgctc yctgggccca ggactgaccg c

41

<210> 2612

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2612

tatacaagac acaagatcta yaacagattt tagaccaaac a

41

&lt;210&gt; 2613

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2613

ttcacagatg aaggggttcc raaatttttg tcaagaaaga c

41

&lt;210&gt; 2614

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2614

tcgccttcgt cttcatctc ktccagctcc tctgattctg a

41

&lt;210&gt; 2615

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2615

cctttgaaaa cagagccccc ygagttacag tatcagcaaa a

41

&lt;210&gt; 2616

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2616

actatcttct gtgcgcatgc rcagagccca ccttgagag c

41

<210> 2617

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2617

aggatgccag ctctttaaat ragacatcgt ttttgcttaa c

41

<210> 2618

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2618

cttggtaggt aagcgctgt rtgtgagcca agtcattcat a

41

<210> 2619

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2619

tgcaccttga actgtttact ytcctgtaac catttacct t

41

&lt;210&gt; 2620

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2620

aaaacatcca cgcaaacagg ytgtgagaag ttacgtctgc g

41

&lt;210&gt; 2621

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2621

aagactgtgc atgtgccatg agacagagat gtggatgccca

40

&lt;210&gt; 2622

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2622

ttgttatttt cttttctctg raatgcagtg atcagttgac a

41

&lt;210&gt; 2623

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2623

ctgtgaaagc agattggagc yctggacctc aaacacacgc a

41

<210> 2624

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2624

tgctcgcatc tgctgagtgt ytgctgaagt ctgaggactg g

41

<210> 2625

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2625

ggctggggga aagcagatca ygttggctaa aggacaggtg g

41

<210> 2626

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2626

cagctgatta tactactgaa cgggataaat gcagcttgat

40

<210> 2627

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2627

ctactgaaac gggataaatg yagcttgatg attttcagct g

41

<210> 2628

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2628

gtcacagttt aaatgctgct rttttactct gtgtaagtag c

41

<210> 2629

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2629

aagcatctct attttgaatg yagatcagca ctaaaagccc t

41

<210> 2630

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2630

gcaacgcccc gttcctggta yaggcctcat atccagcgtg c

41

&lt;210&gt; 2631

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2631

cctggaggca caaggatggc ggggcactca acttccctct

40

&lt;210&gt; 2632

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2632

gttgtgtgac tgtgtggggc rtctcacctc tcgggctgca g

41

&lt;210&gt; 2633

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2633

atcttgcctt ccctcctgcc rtctgttcag gcttgaatcc t

41

&lt;210&gt; 2634

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2634

ccataatcct agcttgaacc ytcctttttc cctgctgacc c

41

<210> 2635

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2635

acataattat tgtaaacatg ycgctttacca gtgacattca t

41

<210> 2636

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2636

ccaggccact gattgctttc rcatttttcta gcattttctt a

41

<210> 2637

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2637

tttctgtgtg gaaagctgat raagtcctca gatgacagcc c

41



<210> 2638

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2638

aataataatg accatttctg kaaattcata gaattccttt t

41

<210> 2639

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2639

gaggacattc cacagaacgt rtgactatta gagcagaagg t

41

<210> 2640

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2640

ctggaggaga ggggtggagc sagttcagcc agcactgggg t

41

<210> 2641

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2641

agaaaggggtt acacaggagc rcacttctca gggagtgggtg t

41

<210> 2642

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2642

agggttacac aggagcacac ytctcaggga gtggtgtgac g

41

<210> 2643

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2643

ctgtgaatcc tctcacctgc rtgaagggcc tggctgcctc t

41

<210> 2644

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2644

cacattgtta tgtaaccaag yctggaattg cagtgtgaag a

41

<210> 2645

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2645

attgttatgt aaccaagcct kgaattgcag tgtgaagaac t 41

<210> 2646

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2646

tcttgactat tagaaaccct rtcagataaa ttttaaaaca g 41

<210> 2647

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2647

tggctttggt tgggaacagc ragagataca gaaccgacgg t 41

<210> 2648

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2648

cttgaagctg atcgttccct cttgaagctg atcgttccct

40

&lt;210&gt; 2649

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2649

gccagacgtg actgctttag rttcctcatg acattcagac c

41

&lt;210&gt; 2650

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2650

ttccaaatca cccagaact ktgcagtatt ttgaagctcc t

41

&lt;210&gt; 2651

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 9 to 11 repeats of c

&lt;400&gt; 2651

gtaaaattgt tttaactaga nttcctaaac caaggtataa a

41

&lt;210&gt; 2652

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 15 to 21 repeats of a

&lt;400&gt; 2652

ctgtatccat tggaaggcac ntgcaaagga aacaaggcaa a

41

&lt;210&gt; 2653

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents ggggtggcggggtggg or deletion

&lt;400&gt; 2653

tggcggggtg gcagggtggc ngagcagttc cacatctccc c

41

&lt;210&gt; 2654

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2654

ctcactggaa cttttttttt naattttaatt tttaaaattt t

41

<210> 2655

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 2655

cacttccatt ctgactgtta ncggtgtgat tcttcctgcc a

41

<210> 2656

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2656

cacttccatt ctgactgtta cgggtgtgatt cttcctgccca

40

<210> 2657

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2657

gcgcgtgctg tttctccctt ntctgtcctt gtacacgtgt g

41

<210> 2658

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 10 to 12 repeats of t

<400> 2658

tttctcgctt tctgggagac naatgttgaa aatatgtgtt t

41

<210> 2659

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tt

<400> 2659

aattccccca ttgcttctct nctgtagaca ttttaaacct a

41

<210> 2660

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2660

aattccccca ttgcttctct ctgtagacat ttttaaaccta

40

<210> 2661

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base



<222> 21

<223> n represents tccctccttgaagctgacgt or deletion

<400> 2661

ccctccttga agctgacgt ngccaagat agttgctagg a

41

<210> 2662

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 12 to 18 repeats of ca

<400> 2662

caaataatg tatacatgta ntccttcacg aaaactcttt c

41

<210> 2663

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2663

ttaataaatg ttattcaat kaaaccaact gctaatttc t

41

<210> 2664

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2664

cctggagatt ttaactttct rcgaagtttt taaaaacaac t

41

<210> 2665

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2665

ggagaagggg accgcatgca ragggtggca ggcagggagg g

41

<210> 2666

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2666

ccccttggga cggttctcac ytgtgccccca cttccccagt c

41

<210> 2667

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2667

gcccgaagc attgctgtat rgcaccagg cctccagtga g

41

<210> 2668

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2668

cgagtaaaat ttttctaccg stttgtttta gagtggtgtc t

41

<210> 2669

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2669

aaaaaatttg tagatatggg kactccctat gttgccagg c

41

<210> 2670

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2670

tcctatggt gccaggctg rtcttgaatt cttgggctca a

41

<210> 2671

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2671

ttctcttcta agaagaagtc ygtgcagata cttagcacia a

41

&lt;210&gt; 2672

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2672

tccagcatct tccctttcca yttttaagtt agactttttt t

41

&lt;210&gt; 2673

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2673

agagacattt agaatatatt cttttaagg tagagaataa

40

&lt;210&gt; 2674

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2674

atatattccc tttaaaggta sagaataacc cttcactgag a

41

&lt;210&gt; 2675

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2675

ggtttatagt gttccccccc wccccgcccc caaaagaccc a

41

<210> 2676

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2676

gaagctgccg ctccaggaag sagtctgtcg ttggagaaga g

41

<210> 2677

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2677

ggaaagctgg ggaactgttt kcctggaaca gagtctcaaa a

41

<210> 2678

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2678

tgtcaactgc gtaacacagg ygtagaagtg gacattgttt t

41

&lt;210&gt; 2679

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2679

tttaatagaa aatggtattc ytgtcttttc tttcccatct c

41

&lt;210&gt; 2680

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2680

gggtaaacc c attttgaata ytagcattgc caatatcctg t

41

&lt;210&gt; 2681

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2681

tatttgcttt ccttctctct ytgttttctt tttctctgaa a

41

&lt;210&gt; 2682

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2682

cagcacgttt ttcctatgaa yaagacattc tccaaataac t

41

<210> 2683

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2683

tggctctgtg tgcataaaca ygcacgcgtg cacgcgcaca c

41

<210> 2684

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2684

atgaacatgc acgcgtgcac rcgcacacac acacacacac a

41

<210> 2685

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 18 to 20 repeats of a

<400> 2685

tgcgattatc tttggttaatt nggcaaataca gtccaaattt g

41

<210> 2686

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aa

<400> 2686

ccccttcaat actagaacaa ngcagacaca ttaaattgta c

41

<210> 2687

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2687

ccccttcaat actagaacaa gcagacacat taaattgttac

40

<210> 2688

<211> 41

<212> DNA



<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2688

actatttcaa tttttttttt nggaggggga gacagagtct c

41

<210> 2689

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 13 repeats of t

<400> 2689

cccagcatta taagaatgac naagtcaga tgtggggagg g

41

<210> 2690

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aa or deletion

<400> 2690

tagcatttgg caaaggagaa ntgccaagaa gtatcttcga a

41

<210> 2691

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ttgaca or gtccaatat

<400> 2691

agaaaactgg atgtctgaaa nactgcact tgtatgtgtt g

41

<210> 2692

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cta or deletion

<400> 2692

ggattttaga ttcctccta nttctttccg accttccacc c

41

<210> 2693

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 10 repeats of t

<400> 2693

tttccatttt taagttagac ncacctctct cgttacttca g

41

<210> 2694

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gagatgttgtggctcacat

<400> 2694

tcctcttcat gtctctatgt nagtcacacct ctttgtgaga c

41

<210> 2695

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2695

tcctcttcat gtctctatgt agtcatacctc tttgtgagac

40

<210> 2696

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cc or deletion

<400> 2696

acacacacac acacacacac ntgctctgga gttgggcaac t

41

<210> 2697

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents act or deletion

<400> 2697

ttagaatagt ttctaactat ntttactccc aagagaagct t

41

<210> 2698

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2698

ctttctgatt ttgatagtc sgttgaagaa gggagtttga a

41

<210> 2699

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2699

ataacatctt ctgcagagaa cttcaatgga aatacactca

40

<210> 2700

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2700

tacagattat ctttggtgat sggagagctt agaagagaca t

41

<210> 2701

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2701

atttcagaag atttattaac wtgaaaagga tcactctgct t 41

<210> 2702

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2702

acatgaaaag gatcactctg yttattcaca gacatatgca t 41

<210> 2703

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2703

aaattattca atctctttgg rcagtggttt ctttttcttt g 41

<210> 2704

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2704

cctgaatgta gagttgagat rtacagaagc tttatccaat t

41

&lt;210&gt; 2705

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2705

gagaagtaag acacattacc yataaatctg taaatatacct a

41

&lt;210&gt; 2706

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2706

cattgatcag ggtgatttat ycatgctaag cttatttaat t

41

&lt;210&gt; 2707

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2707

tatattgatc atgttgatac tttatacaca tatttgctca

40

&lt;210&gt; 2708

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2708

ttttaatcta ataagcaatt saggaccatc taaagggaat

41

<210> 2709

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2709

aggtgcttac aggcaacatc yacatagcag tctgtggctg g

41

<210> 2710

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2710

gacacattag cttcttttct rcagatctct gttctaaaac a

41

<210> 2711

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2711



cttaaaattc tttaatgaaa kcattgcaac aaatttatat c

41

&lt;210&gt; 2712

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2712

ataaatagaa caactcccta wgtttacttc tctgcagtgg a

41

&lt;210&gt; 2713

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2713

atcaccagat aatttactat ycattaagga gtaggtcatc a

41

&lt;210&gt; 2714

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2714

tgattggtta gaatctttga aaatcttcta gtatcattcc

40

&lt;210&gt; 2715

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2715

tactctgtgc attgttaata rcctatcact tgtggctctgc c 41

<210> 2716

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2716

ctgtttaaat tctcattcaa yggccacatg gttaaaataa a 41

<210> 2717

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2717

atggcaatat ttttagaaat rttaactccc aataatgaat a 41

<210> 2718

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2718

tatatcatta ttttaactta kagatagcac tagcccta t 41

<210> 2719

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2719

ctcctaataa tttggactca ycatacttat tcagcactat c

41

<210> 2720

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2720

ttccacacag ggacaagtca rcagaggaaa tttttcttgc t

41

<210> 2721

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2721

aacaaaggtt tattttctta sagttctgat ggctagacgt c

41

<210> 2722

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2722

ttttaaatat gcatgtattt kccactttta aaaactatat c

41

&lt;210&gt; 2723

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2723

aaatcctccc tccttccttc ytttcccagg cccactcta c

41

&lt;210&gt; 2724

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2724

ttccctttct ccttttctcc rtctctctct ctctctct c

41

&lt;210&gt; 2725

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2725

ttttctctc agcaaacata waagctaatt tcctccatcc a

41

&lt;210&gt; 2726

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2726

caccttgata ctggacttgg ygggacagaa aaccagatca t

41

<210> 2727

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2727

agaaagccca ttgaaataag scagggtttt taggttttaa t

41

<210> 2728

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2728

aaaaactttt ttgagttgac watggtgagt ttagtttctg a

41

<210> 2729

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2729

ctgcaggcaa gctctagtga wtgtttatta taggaaataa t

41

<210> 2730

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2730

gacaaatcag ccatgtttta yaatagcaga cattatgccat t

41

<210> 2731

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2731

acaaatcagc catgtttttac ratagcagac attatgccat t

41

<210> 2732

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2732

atcgatatag gctttgggaa tatgaatacc aacctgggt

40

<210> 2733

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2733

aaattttttc ttagacctat kaatcaaagg aggcatacag t

41

&lt;210&gt; 2734

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2734

attttattag atataactgg atgctaacaa ttttaaaagc

40

&lt;210&gt; 2735

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2735

taacaatttc agttagcatg gaagagttgt cccttattta

40

&lt;210&gt; 2736

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2736

tttctgtaat ggttttgctt ycatgcttgg acttgtaatc a

41

&lt;210&gt; 2737

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2737

gtgttgtggt gttttctctg rgatcaatgg tcaaaaacct t

41

<210> 2738

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2738

aagcttagaa gtgataaata ycaaaacaat aatactatac t

41

<210> 2739

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2739

aaacaataat actatactgg rtagactatt agtacaagac t

41

<210> 2740

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2740



acggagtcctc tatggtggga rttcccatgt ttgctgatca g

41

&lt;210&gt; 2741

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2741

tttttaaaat tcagaaactc rgttatggtg tattcttaca a

41

&lt;210&gt; 2742

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2742

ttttaaaatt cagaaactca rttatggtg attcttaca a

41

&lt;210&gt; 2743

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2743

atcatattca ttaccctccc kctattattg tattttgaat c

41

&lt;210&gt; 2744

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2744

aatttagtgc tttttcttaa yggaagtaac ctgcttaaaa a

41

<210> 2745

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2745

taattgactt ttattaatac rtacatgttg tataagtcac a

41

<210> 2746

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2746

tagactatta caaagttggt rgttgctgac aattttgttc a

41

<210> 2747

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2747

gaatccaggc tggaactttt ttccagacac aaacccaaat

40

<210> 2748

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2748

atacagacac tgtccttttc rtcacaaaca tacagatgtg t 41

<210> 2749

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2749

agctcacaca gtatcaaaat yatttttgga aaaattatgc t 41

<210> 2750

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2750

acttttttat gtctacattt satcatactg tgttaagcat a 41

<210> 2751

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2751

tgcaagaatt atattttctc acgtaactat ggccttaaac

40

&lt;210&gt; 2752

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2752

gctatatattt tggtcataca rtgttgtttg ttttcctgtc a

41

&lt;210&gt; 2753

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2753

aaggagtta acaaaaacac rtctcccatc ctgtttccaa a

41

&lt;210&gt; 2754

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2754

aatctagaaa ataattatca yttttataaa atttttagtc a

41

&lt;210&gt; 2755

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tat or deletion

<400> 2755

ctcccaatta gattgattag ngagttcctg gggttactgg t

41

<210> 2756

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 14 to 17 repeats of ac

<400> 2756

aatacattct tcccccttca natgcttact ggcctattta t

41

<210> 2757

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 16 to 27 repeats of a

<400> 2757

aaacttagaa acctctattc ngtaaagaaa atggcagaga a

41

<210> 2758

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2758

attcaatgca actttttttt ngtaatggca gaattagaac a

41

<210> 2759

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of a

<400> 2759

ctgttaggaa acaattgggt ncttttttga gttgacaatg g

41

<210> 2760

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of gt

<400> 2760

ttgtgtgtat gtgtatgttt ntattttaat gaattaatat c

41

<210> 2761

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aa or deletion

<400> 2761

gcttagtata ttatatatat ngcttatata tatagcttag t

41

&lt;210&gt; 2762

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents t or deletion

&lt;400&gt; 2762

caatatttat gtcatttttt nctcacattt actctgtttc c

41

&lt;210&gt; 2763

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 8 to 12 repeats of ac

&lt;400&gt; 2763

agacagacag acacacaaac ntcaacacat gtaaactact c

41

&lt;210&gt; 2764



<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2764

tatcttcaat gaaaataaaa ncaaaaattg tctaatttct g

41

<210> 2765

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2765

acagagtaga tgttcaataa rtatttggtg tatctgtgag a

41

<210> 2766

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2766

tagtgcagcg actatgcctt ratgtgtgtg tgtttgggat t

41

<210> 2767

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2767

aaatgtgtgc ctgtatgtta yacatctgta catatatattc c

41

<210> 2768

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2768

acaaacacaa ctcaaagtat rtgtgttatt aaaagtagct a

41

<210> 2769

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2769

ttgattcagg caagttagtc staaatggct ttgagagact t

41

<210> 2770

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2770

caacataaca ataatttcct rtaagaaaaa tggccatttt g

41

&lt;210&gt; 2771

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2771

gtttagcaag gttagatatt ratgtggatg ttaagacaaa a

41

&lt;210&gt; 2772

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2772

ttgctagaag ctagtaggac yagctttata aatacagaga t

41

&lt;210&gt; 2773

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2773

aactagttag gcaacccatg ygttttaggg gaaaagcaat g

41

&lt;210&gt; 2774

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2774

gcaacccatg tgttttaggg raaaagcaat gaggtcatga t 41

<210> 2775

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2775

atagtttgct cttaagaata yactctgaga aggtttatag t 41

<210> 2776

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2776

ttatgctccc gaggagttag ytctctaaat gcataaggag a 41

<210> 2777

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2777

aaagactggg agcacttccc ratgacaaat actagactag a 41

<210> 2778

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2778

ttacctcata ttaacaccta atattgccac atatcctacc

40

<210> 2779

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2779

aaaaagttat atagaaatat ragtgtcact cctttctagt t

41

<210> 2780

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2780

gtctactagt gttcaactcc yttagatctt agcctgtatc a

41

<210> 2781

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2781

aaagcctaag aaggatgcag ygcaatagcc tatgtgagaa g

41

&lt;210&gt; 2782

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2782

tatggtttgc aaaaaactta ytcgtatatt tgtttttttc a

41

&lt;210&gt; 2783

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2783

caggaaatga agttgcactt ycctctctag gagcaatgct t

41

&lt;210&gt; 2784

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2784

tcagttttgt caatttacac ratggggatt tgggaccttt t

41

&lt;210&gt; 2785

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2785

aatgaataga ctttgagtta ytggttttt agtggataaa t

41

<210> 2786

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2786

tgaatgtcac attttttaaa rtttgtgttc cttatctcat a

41

<210> 2787

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2787

ttttattctg gattcatgtt ygtggaaatt gcagtagtcc a

41

<210> 2788

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2788

tccacaatga tgagtagagt rtcttggtcac agttggcctt c

41

<210> 2789

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2789

agtgtctgaa ttataagcca rttttatagt tggttgggac c

41

<210> 2790

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2790

aaagtgaaag gaaattaata stgagaactt gagcctgaat g

41

<210> 2791

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2791

tagaatgtac caaatgaatc rgcatctctg aggatgggac c

41

<210> 2792

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2792

tgaaatcttc tttatcaact ygattttcct ccagacttta c

41

&lt;210&gt; 2793

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2793

gcaaactcct aagttgaagt sttttaggat attttttgac t

41

&lt;210&gt; 2794

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2794

tcatattttg tatttttaaag rttatctggg ttttactgaa a

41

&lt;210&gt; 2795

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2795

tattcttctg agataaatca ytgaaggagt ggctatgtgg t

41

&lt;210&gt; 2796

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2796

ttcactccta ttcctcgcta yttttcttcc ttatttctta g 41

<210> 2797

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2797

ttcttcttct tttggagctc waaagtagag ttcagttaat c 41

<210> 2798

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2798

atcatcactg catgagagtt rgaattatct aactttgtga t 41

<210> 2799

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2799

tttcttttat ttacaaactt rtttactttt caggtgtatg a

41

&lt;210&gt; 2800

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2800

ctatcagaac aatattatta ktattatttt ttattacact t

41

&lt;210&gt; 2801

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2801

tatgttttga taaactttgc gtacaaataa agaaaattga

40

&lt;210&gt; 2802

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2802

tacaaataaa gaaaattgaa rtattttccaa ataatcaag t

41

&lt;210&gt; 2803

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2803

tctctggctc ccaaaatcat rtattttctc cctctttaca t

41

<210> 2804

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2804

atatattttc tccctcttta attttgctga aacaatcttc

40

<210> 2805

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2805

gtctttaaga acctaaaaaa ctcttaactc aaaataataa

40

<210> 2806

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2806

agtgactaaa gtttttctta aaacaagtgt ctgaatcaaa

40

<210> 2807

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2807

aatacactat gggtatttat rtgtactata aatggagtga g

41

<210> 2808

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2808

atttcctaaa tgatcagatg yatcatatga aaaaagaaag c

41

<210> 2809

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2809

aggtgactga cataaatggg rgcagaggac ataagtgggt t

41

<210> 2810

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 2810

attttctaatt ctgtattaaa ngcgttccag gtatTTTTgt a

41

<210> 2811

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2811

attttctaatt ctgtattaaa gcgttccagg tattTTTTgta

40

<210> 2812

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aa or deletion

<400> 2812

tgatctttaa tagcggggaa ncaggcaagt acgctatagt t

41

<210> 2813

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ca or deletion

<400> 2813

attgagtcag gaaaccaaaa ngtttcaaaa atttgaaaaa t

41

<210> 2814

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 2814

aatgtcatgt cttttttttt naatgcagag tgtacaaagg a

41

<210> 2815

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tgtgtg or deletion

<400> 2815

attgtatgtg catgtgggtg ncatgattgt ctttgtgata t

41

<210> 2816

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2816

ggataaggca acccctatgt rtcactgctg caggagaggg a

41

<210> 2817

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2817

aacataggaa tgtgcagagc yctgtgggga ttagagaaga g

41

<210> 2818

<211> 41

<212> DNA



<213> Homo sapiens

<400> 2818

tgatgatgcc agagctttga kcattggtgg gtatagaaac a 41

<210> 2819

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2819

tccttcagac ttcaaaggcc rtgatatttc atcagagctg t 41

<210> 2820

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2820

tgcttattta acaggcataa kcctttggtct cctgagccag a 41

<210> 2821

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2821

tatgtgcata tgtgtataca rgtaaaagtg tgtatatatg t 41

<210> 2822

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2822

aatcatttga aatttaagaa raaaatatgt tcagagaaaa a

41

<210> 2823

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2823

gtgaaatgag gaacaaagtg yccacctttt tttcctgaat a

41

<210> 2824

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2824

agagagatgt gaaatagtat ktttctgggg aagtagggga a

41

<210> 2825

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2825

ttgttagtag aaagaaaatc raagcctaaa actaaaggaa g

41

&lt;210&gt; 2826

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2826

ttgctattat ataatTTTTT waaaaaaga ttcctaata t

41

&lt;210&gt; 2827

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2827

tgctattata taatTTTTT waaaaagat ttcctaatat t

41

&lt;210&gt; 2828

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2828

ggaaaaatg gggtgaaatt watcaaaggg cagcttatta c

41

&lt;210&gt; 2829

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2829

acattatatt ctatataaaa kagtcagttg aagtaaaaag t

41

<210> 2830

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2830

tctgtctttc ctacttttgt ktccagcatt gacctagcag a

41

<210> 2831

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2831

tgattaagta tttctttggc raaatttttg atgcttaata g

41

<210> 2832

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2832

ttgagtaaca tttaggccaa rtggcagtca taaggaaaaa g

41

<210> 2833

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2833

agaggaatta atcataagag ktttatttgg ctaaagtgac a

41

<210> 2834

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2834

gttagttaat aacagaaaaa wtatcagaaa ttttaaaaaa t

41

<210> 2835

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2835

ttctaaaata agtaagctaa wtattctata ttatactact a

41

<210> 2836

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2836

ttgtataaga gatacaaaac aattcctact aggggaaata

40

&lt;210&gt; 2837

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2837

ctaggggaaa taaagcttca staaggaggt ggcattaagc t

41

&lt;210&gt; 2838

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2838

atggagagaa gcagcagtgt rccacagata aatgaagtga g

41

&lt;210&gt; 2839

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2839

ttcaaaagct gtatttctca ytagtgcttt ttgtgaataa a

41

&lt;210&gt; 2840

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2840

tatatacaca atacctgtcc rgaagatgtg gtataagcca a

41

<210> 2841

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2841

tatcaatact tatgaagaga rctaactatt ctaactaggg a

41

<210> 2842

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2842

ttccccacct cctgttggtt stcctcttaa acttctcctt g

41

<210> 2843

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2843

cctatctgca cataacatta yaaacttatg gcaattataa a

41

<210> 2844

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2844

acaaacttat ggcaattata raactcaata catattatac t

41

<210> 2845

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2845

gcccttggtc ctgttctct rtacctgcct caactacata g

41

<210> 2846

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2846

ctggagacgg tagctcaaac ygaggatgaa aatagacatt t

41

<210> 2847

<211> 41

<212> DNA



<213> Homo sapiens

<400> 2847

ggttatcaac tggggtaaatt ktatctctca caggcaattt g

41

<210> 2848

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2848

tgctaaatat tctataatgc rcaaagaatg atgtaactga a

41

<210> 2849

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2849

ccctttaaat aggcagttac ttttgagaag atacccacta

40

<210> 2850

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2850

ttcatgatcc aaattgtggc racgtatttc caggcaacaa g

41

<210> 2851

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2851

aggcaacaag atagaagaag raaagaataa gaagcaacaa a

41

<210> 2852

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2852

aaaatagaca ttattccaag wtaccaagtt cccggttaaa a

41

<210> 2853

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2853

ttcccgtta aaaatcccaa stataattac tgtggaagga a

41

<210> 2854

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2854

aaggaccaca atctagatca kcattgctct aaatatgcc a t

41

&lt;210&gt; 2855

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2855

tatgccataa tatgtgacac ytttgacact ggtatttcta c

41

&lt;210&gt; 2856

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2856

catctagttg aaatggatta sattttattt ttactacatt t

41

&lt;210&gt; 2857

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2857

attctaaaga aactaatatc rattcatcag aaaattcaac a

41

&lt;210&gt; 2858

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2858

taatcaaatt ttatcactca rtagagcatc acctgagata g

41

<210> 2859

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2859

ttaatataca cagttcgccc wttaacaaca caggtttaa c

41

<210> 2860

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2860

acaacacagg tttaaactac rcgttttcac ttctatgcaa a

41

<210> 2861

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2861

aacacaggtt taaactacgc rttttcactt ctatgcaa t

41

<210> 2862

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2862

atataacttt gctttcattg yaaaaggcaa actgttatat c

41

<210> 2863

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2863

ttcattgcaa aaggcaaact rttatatcat ttaaagactt t

41

<210> 2864

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2864

agtcatagata aacctaatag rataaaacaa caaaaaagaa a

41

<210> 2865

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2865

acagataatt tttacttggt ygtgcttttc tgtatgatat g

41

<210> 2866

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2866

ccttgattgt aataatctcc catgccaaga gtggggccag

40

<210> 2867

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2867

ttgattgtaa taatctccac tgccaagagt gggggccaggt

40

<210> 2868

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2868

actgttctcg tggtaatgaa kaagtctcac aagatctgat g

41

<210> 2869

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2869

ttataaatga gagttcccct rcaaaagctc tcttgccctgc c

41

<210> 2870

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2870

ttgctcttcc ttcattcttcc rccatgattg tgaggccccc c

41

<210> 2871

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2871

gtcatacatg tggatatatg ygttcatggg taatatgctt c

41

<210> 2872

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2872

gggagactcc catagtacca ytggggcttt cttacattga t

41

<210> 2873

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2873

ctttcttaca ttgatgattt ygctaaagaa ggacattctt c

41

<210> 2874

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2874

agaacaaggt accatgataa ygtcttttcta agcacacatg c

41

<210> 2875

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2875

caaaataacc aaatgtaaaa wgtctccctc ccaaactgac t

41

<210> 2876

<211> 41

<212> DNA



<213> Homo sapiens

<400> 2876

gtaatctcac atttctctgc rtttacactt ggtaaaactt t 41

<210> 2877

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2877

agtctcaaat taatagccaa ragcatgcct ttattgtaac c 41

<210> 2878

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2878

ctttaccaca tgacagaatg rcatgttctt agcaaataat a 41

<210> 2879

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2879

tttacatgtt caattttaga atatgcctta gagtagctac 40

<210> 2880

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2880

ttctcacgtc ctatctagcg ygattatgac ccttagttac t

41

<210> 2881

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2881

gtggaagaga attaggtttg yacttttttag cagggagaaa c

41

<210> 2882

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2882

tcgggagaag tttctcccta ygtaattaga gtaatattta t

41

<210> 2883

<211> 40

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2883

atgtaattag agtaatatatt ttttggtaat tatctatcta

40

&lt;210&gt; 2884

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2884

taagtaatgt aaattaggat kcatcagcat ttgacagtgc c

41

&lt;210&gt; 2885

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2885

tggagaacca ttgagagtca rtaaacaag agaatgactt g

41

&lt;210&gt; 2886

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2886

tgatcacaga tccaaatgac rtaatttcta ccatgaacag a

41

&lt;210&gt; 2887

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2887

attttagtaa tacaggataa stataatttt cttgtattct t

41

<210> 2888

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2888

ttagaggtag tatctgtata rttggatctt ataatttagt g

41

<210> 2889

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2889

tgctaagatc tgagacaaac scTTTTgtaa ttataatcat t

41

<210> 2890

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2890

aggttctgta tgTTTTTTTaa yaaatgacaa agatatatta a

41

<210> 2891

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2891

tacacttggt ccataaaaaa ytcctctata ttattcctag t 41

<210> 2892

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2892

attaatagat tcaacgtgag sttccttaa actttagcct a 41

<210> 2893

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2893

cttatataga aagaaatcca saaaactatt ttacctttta t 41

<210> 2894

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2894

aatatattag tttgaacaag ygagacttca ctaaataaa t

41

&lt;210&gt; 2895

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2895

gagacttcac taaatataat rcaatgtatt tgcagcactg t

41

&lt;210&gt; 2896

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2896

aacattccaa aacttttaat ygactcacag catgactttt a

41

&lt;210&gt; 2897

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2897

attccaaaac ttttaatcga ytcacagcat gacttttata a

41

&lt;210&gt; 2898

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2898

tcctaaactt ttaatcgact acagcatgac ttttataata

40

<210> 2899

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2899

aatgaaaaga agctggcaga ytgaacata ctgaatgaga g

41

<210> 2900

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2900

tatatatata tatatatata yacacacaca tacatatatt a

41

<210> 2901

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2901

aattctgagt atcctatttc ratgtatcca atctgtggca c

41

<210> 2902

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2902

taaaaaaaaaaa aaaagtctgc ytttacagca attgagccaa g

41

<210> 2903

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2903

aacgaatcct ccaaattttt saactttttat ttaatcaaaa t

41

<210> 2904

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2904

tcaaggataa taaccaactt rtcaaaaaatc agagataata g

41

<210> 2905

<211> 41

<212> DNA



<213> Homo sapiens

<400> 2905

atttgtttac taatatggaa scittcttcaa gacatatattt t 41

<210> 2906

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2906

tcatcatgta tttccaggac wcctggcaag atgctcctca g 41

<210> 2907

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2907

atctccagag gtcctgctgt ytccccaag tccactgacc c 41

<210> 2908

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2908

ataataaaac aaactgtagg yagaaaaaat gagagtactc a 41

<210> 2909

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2909

tcttaataaa acaaatgagt rtcatacagg tagaggtaa a

41

<210> 2910

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2910

cagagtttga actataatac kaaggcctga agtctagctt g

41

<210> 2911

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2911

gcctgaagtc tagcttggat rtatgctaca ataatatctg t

41

<210> 2912

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 2912

taattggcaa acataaaaaa ncaggtgtct caaagtcaca t

41

<210> 2913

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2913

taattggcaa acataaaaaa caggtgtctc aaagtcacat

40

<210> 2914

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 2914

gatcagcatt acaaccaaga natggagaat gacattcagg a

41

<210> 2915

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2915

gatcagcatt acaaccaaga atggagaatg acattcagga

40

<210> 2916

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents actt or deletion

<400> 2916

tgtgtgattc tatattactt ngtttcaa at ttctctccac a

41

<210> 2917

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tttta or deletion

<400> 2917

ttcaaatatttc tctccacaaa ntttttcttat taaattgtaa t

41

<210> 2918

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 11 to 13 repeats of a

<400> 2918

acttattttaa aaattctttt ncaaaaaaca ggatttataaa a

41

<210> 2919

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of t

<400> 2919

ttgccaaagta attcaagtgc ngtatatttaa acaacttttc a

41

&lt;210&gt; 2920

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 12 to 14 repeats of a

&lt;400&gt; 2920

ttcatgggat agtaagtgtt ncctctgtgc cactatcagt a

41

&lt;210&gt; 2921

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents cttgta or deletion

&lt;400&gt; 2921

gtgaatataa attacttgta naattaaaaa aaaataagta g

41

&lt;210&gt; 2922

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 10 repeats of a

<400> 2922

attacttgta cttgttaaatt ntaagtagaa taattaagag t

41

<210> 2923

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ctt or deletion

<400> 2923

ttctctaact ctttctactc natttcaagc agatgcaact g

41

<210> 2924

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ctt

<400> 2924

aaattcttta tctacttttt ntccctctt tctctgcttt c

41

<210> 2925

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2925

aaattcttta tctacttttt ttccctcttt ctctgctttc

40

<210> 2926

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 2926

aacaagtgag acttcactaa ntataatgca atgtatttgc a

41



<210> 2927

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of a

<400> 2927

agcatgacat ggtagagatg ngcattttta acatttgta a

41

<210> 2928

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tgt or deletion

<400> 2928

tccatcttaa tataaaatgt nctactcaaa aggagaagtc t

41

<210> 2929

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 24 to 27 repeats of a

<400> 2929

tacgagcact aggtatgatg ntatatatat atatatatat a

41

<210> 2930

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 10 to 21 repeats of ta

<400> 2930

aaaaaaaaaa aaaaaaaaaa ncacacacac atacatatat t

41

<210> 2931

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of a

<400> 2931

aaaattattc accacaatac ncaaagtaaa gttatgaaca c

41

<210> 2932

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 11 to 13 repeats of a

<400> 2932

aattctctta aaataatggt ngctctgcttt tacagcaatt g

41

<210> 2933

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of a

<400> 2933

caattatact ttacctcttt nctaatttca aattcatata t

41

<210> 2934

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2934

aataggggct taataactct saaacttatg atttctcata t

41

<210> 2935

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2935

gaatttatcc tacagatatg rccacacaga aaatgacata t

41

<210> 2936

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2936

atgaaattag tttaaaaata rcaaccttaa ctatactcct c

41

<210> 2937

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2937

acagacttac caacaaagaa ktatccttcc caaaatgtct a

41

<210> 2938

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2938

actcatggtt tgcaaattaa stttttagga aactttatct c

41

<210> 2939

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2939

ccattctggt gctttctttc rtgaaactat tttccatcag t

41

<210> 2940

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2940

ctctttattgc tcttcttcca ygtttttaatc taaataattt a

41

<210> 2941

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2941

caggaaactt tcacaaagcc ctaattaatt taagctccct

40

<210> 2942

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2942

tggtttaatg taggagagtt yaccttcaca gttaaattac a

41

<210> 2943

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2943

aatgtcttgg gcatatttgc rttcatttgg ggcattcagt t

41

<210> 2944

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2944

atttgcattc atttggggca ytcagttcta ctagatacaa a

41

<210> 2945

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2945

gaactggaag tattttgaca kctttaccac atttcttcat g

41

<210> 2946

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2946

agaattttat ttttatactt rtaagtgggc agttaccttt t

41

<210> 2947

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2947

tcaatttcat gttgctctta yagttatagg tattctaaag a

41

<210> 2948

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2948

taatcacgtc tataaagttt stgatattct ttaacaaaat t 41

<210> 2949

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2949

tattctttaa caaaattgat wtaagaacaa ataggaagaa c 41

<210> 2950

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2950

ggtttgaact gcacctgttc rcttatatgc agcttttgtc c 41

<210> 2951

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2951

tttaacagaa taaaaaaaaa wattttgtaa cgacaaaaga a

41

&lt;210&gt; 2952

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2952

atatgcacct taaaaataac stggattttt aaatatgtaa t

41

&lt;210&gt; 2953

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2953

taaatatgta atgtacataa kgaatattat gcatattttg t

41

&lt;210&gt; 2954

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2954

cattaataat cagaataaaa ragaaattta gtcctattt a

41

&lt;210&gt; 2955

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2955

atccaactgg ggttttagatt kcctctttct gcctctcctc c

41

<210> 2956

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2956

gcctctcctc catctgcacc ytctcttttc ctcagcaaac a

41

<210> 2957

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2957

ctatgccctg taatctcaca yttcccttta tttaaaattg g

41

<210> 2958

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2958

tcgtgtctgt gttagcatat rataactcat cagggtttgt g

41

<210> 2959

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2959

ataacataaa tgagtaaaga rtatcaaggg caggaaatta g

41

<210> 2960

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2960

actactctcc ccatacacac yaaaactcat gtgctcccca g

41

<210> 2961

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2961

tcatctatgg aggactgcaa ycattatcat tatttcccag a

41

<210> 2962

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2962

taacaaatga taccagccat satactattc tctggtaata g 41

<210> 2963

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2963

cctttatattt ttgagaacct rgtggatgat attaagacgt a 41

<210> 2964

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2964

cctggtggat gatattaaga gtatatagat cactgtaata 40

<210> 2965

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2965

aaaattatat atatacatat rtaatcttac ctaagtattc a 41

<210> 2966

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2966

tgttttttta agggtagtga ygtgaatagt aaagcgaatt t 41

<210> 2967

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2967

agttgagcaa attgctctca rgtagcataa tgtcacttga a 41

<210> 2968

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2968

gtttattgat ccatttttta rtggatcaac attgtagtga g 41

<210> 2969

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 2969

atttatTTTg agcaaaggTc rcgactctct tagaaagcct c

41

&lt;210&gt; 2970

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2970

ttatTTTgag caaaggTcgC ractctctta gaaagcctca c

41

&lt;210&gt; 2971

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2971

tgagcaaagg tcgcgactct yttagaaagc ctcacaaatc a

41

&lt;210&gt; 2972

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2972

atttgtaact ttaagtctta kataacttat atttacaaaa t

41

&lt;210&gt; 2973

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 2973

cagatattaa tatatatattt wttattgaaa tatgttattt t

41

<210> 2974

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2974

acaaaatttc tccatcttgt yatatcatcg ttgttctgca t

41

<210> 2975

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2975

aatttctcca tcttgtaata wcatcgttgt tctgcatttg a

41

<210> 2976

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2976

ttttttttga gatggagtct ygctctgttg cccaggctgg g

41

<210> 2977

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2977

aagctccgcc tcccaggttc kccacccttc tcttaaagaa a

41

<210> 2978

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2978

tccttcttgt ttcaacttct rtatttcctt ctaatctgcg a

41

<210> 2979

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2979

tcacagattt gatttaataa wtacttatca aatcttccta t

41

<210> 2980

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 2980

cttgcccaat atcctaccaa ygtattatta aacggcatgg a

41

&lt;210&gt; 2981

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2981

tcctagtttc ctgaagata rgctacaact ttagtaaact t

41

&lt;210&gt; 2982

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2982

tccctggtcc tgtgttgtcc wgtagtgaag acctgaaaga g

41

&lt;210&gt; 2983

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2983

cctggtcctg tgttgtccag yagtgaagac ctgaaagaga g

41

&lt;210&gt; 2984

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2984

cccattttca tgagtggtta rgttttgtcc cgtttcaaac t

41

<210> 2985

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2985

ccattttcat gagtggttaa rttttgtccc gtttcaaact a

41

<210> 2986

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2986

gtatttttga aagaaaatgt rrgtggaaga gaaatatttt a

41

<210> 2987

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2987

atatacagaa tttcatacac yaatttctta aattcctaaa t

41

&lt;210&gt; 2988

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2988

taaatatttt agtttgagac ktcttttaaat ataatggaat g

41

&lt;210&gt; 2989

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2989

tgtatttggc aaatgtattt kttaatatatt caaaaactat t

41

&lt;210&gt; 2990

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 2990

cagaacagaa attactcagc racttgggt gaatgcccaa g

41

&lt;210&gt; 2991

&lt;211&gt; 40

&lt;212&gt; DNA

<213> Homo sapiens

<400> 2991

tttcttagaa ttattttgat tttcaataac atcattaata

40

<210> 2992

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2992

aaaaaactgc attttagtgg sttagctaga aaagatttgt c

41

<210> 2993

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2993

ggtagctag aaaagatttg kctcatatac acaataaatt a

41

<210> 2994

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2994

caacagagga tcaatgtaaa kgaaatctct taaattaaac a

41

<210> 2995

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2995

ataaatatta atgttaaata ytaaagactg aatgcaatta a

41

<210> 2996

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2996

taaaatgaat cggtaaaaca ktcattgtata aatcactgtc a

41

<210> 2997

<211> 40

<212> DNA

<213> Homo sapiens

<400> 2997

ataggcatat aatactcttt ttccctctgt atataggag

40

<210> 2998

<211> 41

<212> DNA

<213> Homo sapiens

<400> 2998

aacagctgtg gagcacaagg rgcttgtagg atatataatt c

41

<210> 2999

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tatc or deletion

<400> 2999

atatacataa catataccta ntatgttatg tgtctgctta t

41

<210> 3000

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents atattcacttggtatctg or deletion

<400> 3000

agcatcagca acaattaaaa ntagtttaat aatggaccaa c

41

<210> 3001

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tttta or deletion

<400> 3001

tattcacttg gtatctgtag nataatggac caacatcaac a

41

<210> 3002

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t

<400> 3002

cctgttcgct tatatgcagc nttttgtcca accaaacaga a

41

<210> 3003

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3003

cctgttcgct tatatgcagc ttttgtccaa ccaaacagaa

40

<210> 3004

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 3004

tataactttc tctttataaa natgcaaaat gttatagcat t

41

<210> 3005

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 3005



aaaaataaat gaagtggagg naaaaaaatg atttcaagtt t

41

<210> 3006

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of a

<400> 3006

acatccatgt ttaacagaat ntatttttgta acgacaaaag a

41

<210> 3007

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g or deletion

<400> 3007

gagattgttt aaccaaatta ngaaactatt attcaacaca c

41

<210> 3008

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 4 to 5 repeats of at

<400> 3008

ttttatatat gaattaaaat ncatatataa tcttacctaa g

41

<210> 3009

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 7 to 8 repeats of t

<400> 3009

attttctata ttatgaactg naagggtagt gatgtgaata g

41

<210> 3010

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 19 to 23 repeats of t

<400> 3010

tagtgtgccca cccttctctc ngagatggag tctcgctctg t

41

<210> 3011

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 3011

ttctttctta actcaaaggc nttttttttt ccatgtgaca c

41

<210> 3012

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tgat or deletion

<400> 3012

aaaaatctta aggcacacac ntgacagttg ccttgattgt a

41

<210> 3013

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 8 to 10 repeats of t

<400> 3013

aaataaattg ttggcatcta natttttcta agggtcgctg t

41

<210> 3014

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

&lt;400&gt; 3014

gagaaaagcc tgatgccttt naaaaaaat gaaacacttt g

41

&lt;210&gt; 3015

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3015

gcagctcgga ctcagctccc rgagcaaccc agctgcggag g

41

&lt;210&gt; 3016

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3016

gaaggcctca gccccagcc rctgggctgg gcctggccca a

41

&lt;210&gt; 3017

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3017

caatagaaca accttttctc rggctcatgc cgccctgacc c

41

&lt;210&gt; 3018

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 3018

ttctctggct tccccactc mgttctccag cctgcctgct c

41

<210> 3019

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3019

gagacttccc atgataacct yccagggtt ccccccaaa c

41

<210> 3020

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3020

gaaccagatg cccccagcct ygactcagtc ccagtctcca c

41

<210> 3021

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 13 to 15 repeats of a

<400> 3021

ggaagatggg ggcctttgtt ngtaacatgga gaaattaact g

41

<210> 3022

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 12 to 15 repeats of t

<400> 3022

aatagggtga ggaggagcag ntcaagagtg tggagggggc a

41

<210> 3023

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3023

ttgacctcca aaagtgtttg rattacaggc atgggccatt g

41

<210> 3024

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3024

gtgtgtgtga gcatgcatat mtgtgtgtgg tggggagtgg g

41

<210> 3025

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3025

ccacatccat cattcgagac maactcgtct cagctgcat g

41

<210> 3026

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3026

cacatccatc attcgagaca mactcgtctc agctgcatg a

41

<210> 3027

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3027

actagactgc tagtgtcctc yggtagagccc agtcccatag g

41



<210> 3028

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3028

ataaatgtgt acatgagtgt rtgaacacaa atacataagg t

41

<210> 3029

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3029

tgtagcagcc cacatcgcca rtgttcacac ctgagagaga g

41

<210> 3030

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3030

ctgtgtcaga gacacagaca sggaggtcct ggctgccccca g

41

<210> 3031

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3031

ttcctgagag gcaaatcccc ytcccctact cgggagggtgc c

41

&lt;210&gt; 3032

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3032

cctgcccaca gctctggctc rtcttgcccc agtgccatga c

41

&lt;210&gt; 3033

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3033

cctgtccacc actgtcgccc rccccacaat gcctccacag g

41

&lt;210&gt; 3034

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3034

gcaccaagac ccttggttc ytcccactca gagtccaagc a

41

&lt;210&gt; 3035

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3035

gctcatcctc tctggtcctt ktgccccagc acaggttcct c

41

<210> 3036

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3036

tctgctccac ccgtgcaccc scaaagaggc aaagagctgg g

41

<210> 3037

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3037

tggcgttggc tgcagttaac wgtgtccatt cccttcttcg t

41

<210> 3038

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3038

tcgaagtaca aaggaaagtt yaaagagaag cctgagcctg g

41

&lt;210&gt; 3039

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3039

gaccaatggg tttcagactc raagacaaaa attatgttta t

41

&lt;210&gt; 3040

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3040

gcccacgtca gacatgacca rtcaatcaca gcactttctc c

41

&lt;210&gt; 3041

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3041

attgtcctgt cctctaccca rgggagccat cctttatgaa c

41

&lt;210&gt; 3042

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 3042

tacatttggg ccccagggggg nagcggctga tcaggagaga a

41

<210> 3043

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3043

tacatttggg ccccagggggg agcggctgat caggagagaa

40

<210> 3044

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 3044

tctgacttgg actgggcaaa ngatatggtgg tatctggata g

41

&lt;210&gt; 3045

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3045

cagggatcct cattctgagc scgaggcgag ggggactcgc a

41

&lt;210&gt; 3046

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents g or deletion

&lt;400&gt; 3046

cgggtcccgac tgccgcgggg naaggcgtcg gaaccgctta g

41

&lt;210&gt; 3047

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> modified base

<222> 21

<223> n represents 11 to 13 repeats of t

<400> 3047

ttttgaactg aagaacttac nataacgaac gttgacatct t 41

<210> 3048

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3048

gcatgcagct tagaagtttt rttttatgag ggtctctaac c 41

<210> 3049

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 3049

ggtacgtttt tcagaattta ntttggaagc tcttcagtt c 41

<210> 3050

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3050

tcagctcttt agtgagactt staaattttc taagacaagc a

41

<210> 3051

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of t

<400> 3051

agcatagtgg acaagcagta naaacgtgaa gagcagaagc t

41

<210> 3052

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3052

tactgtaaga caatatgtta ytggtttttg tcttgctaaa c

41

<210> 3053



<211> 41

<212> DNA

<213> Homo sapiens

<400> 3053

ttgggaccca catagagtca ytacttaaaa taaatgacca g

41

<210> 3054

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 3054

aggaatgtgc tttttaaacc nagatggtgt tagtcaagga g

41

<210> 3055

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3055

gacttttata attttgtata rctgatatta taggaataca c

41

<210> 3056

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 3056

aaagagttat gttttttttt nctgcatctg atattatatg g

41

<210> 3057

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3057

ttgtcttttt atttattcat ytaaacttct gttttctggg g

41

<210> 3058

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3058

ccttccaaac ctttacttaa sattgtctgt tttggtcata a

41

<210> 3059

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3059

cataaattgt cagtcaaact rcatgttaat agaggacttc a

41

<210> 3060

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 3060

aggacttcag gttttttttt naaatacttt ttcataacta t

41

<210> 3061

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3061

cccttcact acatgggcct rtggtaccat gtggaattat c

41

<210> 3062

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3062

aactccaggt tgcaaata ga ygtttctggt attttaagta g 41

<210> 3063

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3063

ttttgaaagc cctcctagca kttctttaat ttctttattg a 41

<210> 3064

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3064

agataaattg atgaattatt yactctgtgc tgctgataga t 41

<210> 3065

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaga

<400> 3065

taaaaagaat ttctaaaaga nccttttttt tgaataactc t

41

<210> 3066

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3066

taaaaagaat ttctaaaaga cctttttttt gaataactct

40

<210> 3067

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3067

ctgaaataga aacctttcag wgtaccttgc agagcagtga a

41

<210> 3068

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3068

cagtgtcata aagatccagc rgaaatcaaa atgtttcata t

41

<210> 3069

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents aaaa or deletion

<400> 3069

tctaaaaaaaa taaataaata ngagaaaatt aagtttaaga t

41

<210> 3070

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3070

actcatttat tggttcaaag scttcttcaa ccttaggata t

41

<210> 3071

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3071

ttggttcaaa gccttcttca rccttaggat atgcattgag g

41

&lt;210&gt; 3072

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3072

gtttgagaca ttaacttcta rttcaactga agatgctagt t

41

&lt;210&gt; 3073

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; modified base

&lt;222&gt; 21

&lt;223&gt; n represents 9 to 11 repeats of t

&lt;400&gt; 3073

gaagagcaca gtagaaagac naaccctagc aatactattg a

41

&lt;210&gt; 3074

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3074

atcagtacaa tgtgttgaggc rtacaacact taatttaaaa t

41

&lt;210&gt; 3075

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3075

taatacaaat catttgaagc rtttactatt aaaaaaacia a

41

&lt;210&gt; 3076

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3076

ctttgagcac ctactgcatt wtaagtgtg ttaagatgtg g

41

&lt;210&gt; 3077

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3077

ttaatcacct caatctttaa ygaatttctt gatttttctt t

41

&lt;210&gt; 3078

&lt;211&gt; 41

&lt;212&gt; DNA



<213> Homo sapiens

<400> 3078

aatcaggata tgggggggttc rttcttttatt ctgccacaaa t

41

<210> 3079

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3079

cattttaaaa tagtgcttta rtaggacttg gctgttaaag t

41

<210> 3080

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3080

tggcataggt ttaaaaatgt ytggttagg actcttttcc a

41

<210> 3081

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a or deletion

<400> 3081

taaagaagga gaaaaaaaa nctaactga gactttgcag g

41

<210> 3082

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3082

ggatgatgct acccaaggaa ytgacactt ccagacagta c

41

<210> 3083

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3083

tcactccatt ttttaactgt scttcctaaa tgtgtgggta a

41

<210> 3084

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3084

tctttgttac acttcttaaa ycgggggtatc agataatctt c

41

<210> 3085

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3085

gaataaaagg atagggacat kggtaagacc actttttccc t

41

<210> 3086

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3086

gcctctcaat tttctcatgt ktaatagaga gaaaaccctg c

41

<210> 3087

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3087

gactgactgg ttcataagtt sagaaatttc actgtggtgc t

41

<210> 3088

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3088

tggtattacc atagtagttc ygtaacactt ggccgttgac t

41

&lt;210&gt; 3089

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3089

ttaacctctc ttgagtaaaa rgaatccttc agaaccagag g

41

&lt;210&gt; 3090

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3090

gtaaaaggaa tccttcagaa ycagagggga tggtagcgac c

41

&lt;210&gt; 3091

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3091

catacacttc tgctccgttt kccctgtcat tctgtgagcc a

41

&lt;210&gt; 3092

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 3092

tattcatact gtgaaaaagg wgtttcatgg tgaagaaatt c

41

<210> 3093

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3093

ccacacctaa atgagattcc ygttttaaac actctcaagc t

41

<210> 3094

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3094

tgcacatata tactcattgt rgtttttact aggaactaga c

41

<210> 3095

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3095

ctaggaacta gaccaaactg rcagtactag aaatcttttt a

41

<210> 3096

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3096

cattgtgcta gattaggtgc yggggtaggt atgaaggggc a 41

<210> 3097

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3097

ctccttgccc tcctgaaaca yataagatct actctttgga a 41

<210> 3098

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3098

gattatggct gattttcagt ktctttttaa tatttttctc t 41

<210> 3099

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3099

tctatatatttc tcgaacggcc rtgaattact ttcataatct a

41

&lt;210&gt; 3100

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3100

ttggccccca ctccacctgt satttcatta ttaaaacaac a

41

&lt;210&gt; 3101

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3101

ctctatttgg cctaacggta ycttggtttt cttttacttc c

41

&lt;210&gt; 3102

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3102

ttgggtcata agagctctct scatggtgtc tcaaacagat g

41

&lt;210&gt; 3103

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 11 to 13 repeats of t

<400> 3103

tttgtctctg catacttggc ncacagtgaa gtctggaata t

41

<210> 3104

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3104

aataggatac aaatacacaa wgatagtgat tcagatccta a

41

<210> 3105

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3105

taaaatcggtt tttattgtta ytaggtatat aaaatttgct a

41

<210> 3106



<211> 41

<212> DNA

<213> Homo sapiens

<400> 3106

tctgatttta tcactgttta yagattgctt agtcatactc a

41

<210> 3107

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3107

tgtagcctg tagctaaatg yttttcaa atgtgaacgg t

41

<210> 3108

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3108

atgaggccg acttttaaga yttttgtcta cattttcttc c

41

<210> 3109

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3109

tattgatgga gttcttttta kaaatggact tttaccttct t

41

<210> 3110

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3110

gcatttgggt gtctgagaga yatatccaga aatatgctat g

41

<210> 3111

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3111

tttcaagttt atttctgttt kttttttttt tttttttttt g

41

<210> 3112

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3112

aatccaaaca tctgtacttt ktagtggaca agatttatgt c

41

<210> 3113

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3113

gaaaagctac ttattcaaa rataaaagta ttttaagaaa a 41

<210> 3114

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3114

aagctggaga aaatactagg ytttctcaa cagtgatttc c 41

<210> 3115

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3115

tttggagggg aactaatccc rtgacttcta ggttatctct t 41

<210> 3116

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3116

ttcacccctc attttaggtt rggggaggtg gcttgctaca g 41

<210> 3117

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3117

cctcatttta ggtagggga rgtggcttgc tacagtttta g

41

<210> 3118

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3118

cgtgaatcat tcagtatttt rtttaaaaat accagtttga a

41

<210> 3119

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents acta

<400> 3119

catgatttat tctctaacta ntgctaagtc aaagattctg c

41

<210> 3120

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3120

catgatttat tctctaacta tgctaagtca aagattctgc

40

<210> 3121

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3121

acaatgaaaa ttaagaaagg wgaagaggga agaagcagag a

41

<210> 3122

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3122

tacaagacac aggcatttt ractagttaa ctgggatctc t

41

<210> 3123

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3123

ggctttgact tcggaaacct ktgggttata acaaagtact g

41

<210> 3124

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3124

gacattggtg aaaaccaggg ytgtttagga gtgtcctgtc c

41

<210> 3125

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gtg or deletion

<400> 3125

catctgagat ttgccttgtg ntttaccgag ttagtgggtg c

41

<210> 3126

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3126

gatacatgaa caatttggtt yatcctcatg atatctttca a

41

&lt;210&gt; 3127

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3127

taaaggccac aatgcagtga ytgaaatctc cagttacatt t

41

&lt;210&gt; 3128

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3128

tttccttagt ccttccatca ygaaactaaa gctgtcttcc a

41

&lt;210&gt; 3129

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3129

tttatatctc cacttttgat rggacactag caaaagatat t

41

&lt;210&gt; 3130

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 11 to 12 repeats of t

<400> 3130

accatctcat tcagtgttc nccctccact tgttgccagg c

41

<210> 3131

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3131

ttttttttcc ctccacttgt ygccaggcag agctgcttc c

41

<210> 3132

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3132

cagattgctt gaatttcagc mccagcttgg aatttgcaga g

41

<210> 3133

<211> 41



<212> DNA

<213> Homo sapiens

<400> 3133

gatttctgtg aaaattgaga rgatctggca acctggggct c

41

<210> 3134

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3134

ggcccctccc caggcaaagc rgtgagaaca tggctgtttc c

41

<210> 3135

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3135

tggagcgggc caagaggcgc rtagtgggga gtccctttga c

41

<210> 3136

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3136

aaccagtctg gacagatccc ytgtagcttg tgaaagtga g

41

<210> 3137

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3137

tagcttgtga aagtgtagga rgtgaagggc tggctcactt c

41

<210> 3138

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3138

tctgaaggcc tcgtgtactt yagtggggtg gggagggcca c

41

<210> 3139

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3139

aatttttgcc tctttttact rtcaatacaa cttgctaagt t

41

<210> 3140

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents tta or deletion

<400> 3140

ctatgtgctt atgattatta ngccaacaga acaatcagaa t

41

<210> 3141

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3141

ctaaatgtgg gtcactggga ygtaaccag gagagagaat c

41

<210> 3142

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3142

ctttacatct gtgcaagaga rggacaagga gcaaatcagc c

41

<210> 3143

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3143

gtaaacttgc attgaaatgt rgaaagcagg taaaggaatg a

41

&lt;210&gt; 3144

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3144

tggggaatac caaaagcaac yaaagttcac cagaaaaggg g

41 .

&lt;210&gt; 3145

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3145

aaacttctaa aagaaatacc rtgccagtca gattatgtgc t

41

&lt;210&gt; 3146

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3146

catacattca acaaacattt ygtggagcac atgctactat a

41

&lt;210&gt; 3147

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3147

gatagggaag atcactgtga rctggaaaaa tctgggaaac c

41

<210> 3148

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3148

catcttgtct agattgcatg yttgtttggt tgtttgtctc t

41

<210> 3149

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3149

ctacttaccc ccaaaacatg wtttctcttt cttaaagac c

41

<210> 3150

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3150

ccagagtgac tccagtatac mtcactgccc aggacccaca g

41

<210> 3151

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3151

cacttgaaag caaccataat ygtgaggttt ctgatgctgt a

41

<210> 3152

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3152

ttgctttaag cgaaatgaac yatacggaca ggagaacagc c

41

<210> 3153

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3153

acaggaacac ttagacatgc racccactcc caccctccgt c

41

<210> 3154

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 3154

cccaccctcc gtcttggggg naggaaagca cactactgtc c

41

<210> 3155

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3155

cccaccctcc gtcttggggg aggaaagcac actactgtcc

40

<210> 3156

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 3156

actgtcccaa agaactaata nctgaaccag tgctgccttg t

41

<210> 3157

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3157

actgtcccaa agaactaata ctgaaccagt gctgccttgt

40

<210> 3158

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents cct or deletion

<400> 3158

ttaaagtttt aaaaaaactt ntaaaaacta ctcatgagat g

41

<210> 3159

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3159



catcccagga cttgctgttc scaggtgata aactgcacct c

41

<210> 3160

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3160

aactgcacct ccccaggact mccgctgcac tcacatgcag c

41

<210> 3161

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3161

tttgggccgg gaacaatttt ycaaggttgt aaagccaaat t

41

<210> 3162

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3162

acctgggata ttctgaccc matctggttt tcttttacc a

41

<210> 3163

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3163

atagagactg gaagtcatca ygtgcagttc accgcttctg a

41

<210> 3164

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3164

cgtgctccac tgagctcctc kgtcacaccc cattcttgcc c

41

<210> 3165

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3165

tgcagctgta aaaagaaatc ygtaaattgt gaccgtacta c

41

<210> 3166

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3166

cagtgttagc cagccgatat yggtaaggc tgccccgctc g

41

<210> 3167

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3167

ccattatccc ctttccccgg yctcagctgt gcactccagg c

41

<210> 3168

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3168

aacttacccc tctatccagc wctatccaga aggacaccag g

41

<210> 3169

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gga

<400> 3169

acggaggcct caaaacagga naaataagga gaccctccc c

41

<210> 3170

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3170

acggaggcct caaacagga aaataaggag acccctcccc

40

<210> 3171

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3171

gcacagcttt tgtcaggagt ycgtagcctcc ggtctttgtt c

41

<210> 3172

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3172

gccttaactt tccccacctt kggcttctct tgatttttgc t

41

<210> 3173

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3173

gtacaggatt tcaaaatact rtatatagaa accagacagt a

41

&lt;210&gt; 3174

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3174

cctgttgtct tgggtgggtgc rcaacctttg ccagttaaag g

41

&lt;210&gt; 3175

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3175

agaggataga agtcctttct ratttagagg gcctctttct t

41

&lt;210&gt; 3176

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3176

tgaaaacata ttctttttga rtttagctga gtggcctgtt g

41

&lt;210&gt; 3177

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 3177

cctgagacac cttacagctc ygtcctgctt ccatgtcatt c

41

<210> 3178

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3178

tttcatcttt ctacaaatgg scccctcttc ctggctgcac t

41

<210> 3179

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 12 to 14 repeats of t

<400> 3179

gcttcagagg tttttgtggg naacattcta tcaactttta a

41

<210> 3180

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3180

ccaaaagccc tctcttttaa yatgacatta ataagacaat t

41

<210> 3181

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3181

caagatggat aagacgtcac ytaaggtcct tagcatgttg a

41

<210> 3182

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3182

ctctaagtaa ttcaattatg katgaccaaa ggataaggaa a

41

<210> 3183

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3183

cagggcctgg gctagctgcg ygaattggca tgtggttctc a

41

<210> 3184

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 16 to 17 repeats of t

<400> 3184

aggaaaaggtt ttcttttttc natcaattat ttggacctgg a

41

<210> 3185

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3185

cgtgtgcaga gtaggcttgg rttttatctt gcccatgagt t

41

<210> 3186

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3186

actcggtaga gtcactcctg mctggtgtcc cacatccact c

41



<210> 3187

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3187

accatgggggt atgggaaaaa mgatcacggt cctgggtttg t 41

<210> 3188

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3188

gctcagcttc ttgaccaagt kgttgtctat aggcagttga g 41

<210> 3189

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3189

ggcccgggttg taggggagga katctccttt ctggcctttg a 41

<210> 3190

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3190

ccacatgttc cccgggtgag rgtagctccc tcccagggt a

41

&lt;210&gt; 3191

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3191

gccagaagta gatgccccca rttcagctgc tgcattactg g

41

&lt;210&gt; 3192

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3192

caagtcactg ggccgttagc stccgtgcct gcaccttgaa g

41

&lt;210&gt; 3193

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3193

tcactttcca cagccacact rgccagcctg gccgagaagg a

41

&lt;210&gt; 3194

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3194

agagcccccc ctgactgttt scctaaggca ccattcccaa c

41

<210> 3195

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3195

ccactccctc tccaaatggt rctgccaatt cttcttctaa g

41

<210> 3196

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 3196

tagagaattt tcaggggggg ntcaaccaag agggagccaa a

41

<210> 3197

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3197

tagagaattt tcagggggg tcaaccaaga gggagccaaa

40

<210> 3198

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3198

aacagctggt gatgagccaa ktttccactt tcctttggtg a

41

<210> 3199

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3199

ggggcgtgtt atttgacacc ygtgagcttt tcctttgaca g

41

<210> 3200

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3200

gatgctgtta ctctccttgg rgacagacac tgccctgtgg a

41

&lt;210&gt; 3201

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3201

aagagccaca cagaaccacc scctactgg gctgttgga t

41

&lt;210&gt; 3202

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3202

cacctgtaag tggagcggct yagaccaagg atcccaggat g

41

&lt;210&gt; 3203

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3203

gagaaaggac aggaggagga yacaggctct caggaaggaa a

41

&lt;210&gt; 3204

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 3204

accattctta tccactaagc rtgtccccc a gatcttatt c

41

<210> 3205

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3205

cgcctccctc gccctcccc mtccagtga c ttggcagtg g

41

<210> 3206

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3206

atccccctgg tgtgtgtgaa mcatggtgc ttgtctaggg g

41

<210> 3207

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3207

gcctacaggg tccctctccg ygaaaggaat gctgacctgt c

41

<210> 3208

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3208

actgaggcat gggaggaggg sgctattccc agggcagaag g

41

<210> 3209

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3209

ccagacggag agagcctggg rcaggagaat gtatctccag g

41

<210> 3210

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3210

ttgacttttg aggccagata yaccgatttc ttccaagaga a

41

<210> 3211

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3211

taaacaatgt gttcctacgg rctctccagg gagtgtggag t

41

&lt;210&gt; 3212

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3212

caaacagggt ctgccagatg rcatatgccc agcagccagg g

41

&lt;210&gt; 3213

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3213

agcagccagg gaggacctgc sgttgggcga agcccctgtg t

41

&lt;210&gt; 3214

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3214

cttttggccc ctcagggagg rgaagagcag ctcagcagca t

41

&lt;210&gt; 3215

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 3215

ttcttagttc ctcatgtttc yctctagaat gttttcgtgt g

41

<210> 3216

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3216

gatttgtcaa gtggcatgca yggtttatgc cctctctcct g

41

<210> 3217

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3217

gggtgcgctt ttgacaactg stcagtagcg tgttcacaag c

41

<210> 3218

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3218

tggaatgcgg gggctcagcc rtggaagaca aggggctctt c

41

<210> 3219

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3219

tgccaaagag gaggtacaag rgggctgtgg caaggctacg a

41

<210> 3220

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3220

ctctctgatt ttctaacaca mccggtcccc gagtcagtca t

41

<210> 3221

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3221

gtgggttttg ccaggaatca rttcaagaac ctgtggattc a

41

<210> 3222

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3222

aatatttgtt cattccttcc sctggtagtt attatggaaa c

41

&lt;210&gt; 3223

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3223

cagtgccagg agccaggggg ycttctccag atgactctga g

41

&lt;210&gt; 3224

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3224

ttgtttacat tgtatattat rtaccaagcc ctgtctcagt g

41

&lt;210&gt; 3225

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3225

agggtccag tacctgtgcc kgtggcccct gtgctgtact g

41

&lt;210&gt; 3226

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3226

cagtgccagg agccaggggg wcttctccag atgactctga g

41

<210> 3227

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3227

ctccaatctg ctgacacccc rtccccccca caccgccgct c

41

<210> 3228

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3228

tctgtgctaa cgtctgcttc yctcatgccc cctaggctgg c

41

<210> 3229

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3229

gggctccttc ctcaaacatc sgacggcgga atgtggcaga t

41

&lt;210&gt; 3230

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3230

ataggttgtc tgtgaaatcg yagtcctgcc tggggaggga g

41

&lt;210&gt; 3231

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3231

gtgagcagga aactgtagga raaggatatt ttccctcatt t

41

&lt;210&gt; 3232

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3232

gcctcccagc taccacaccc rctcaggag gggtcattcc a

41

&lt;210&gt; 3233

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 3233

aacctagggt gctgagaatc ygggtgggat taccagcaaa a

41

<210> 3234

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3234

acaccacgcc ctgcaaattg ytgggaactt gtcggtggca a

41

<210> 3235

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3235

caggagccct gcggctgccc sggttctgtg aaatggcagt g

41

<210> 3236

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3236

cgcagcgcca ggactggccc sccgaggatc tggccggccg c

41

<210> 3237

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3237

ctcaggggct gcgctggagt yccagctcca gccactgcgc t

41

<210> 3238

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3238

cagatttttc ttaaggtgca stagccactg aggatatatt t

41

<210> 3239

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3239

caattatggt ttatcttagg racatgttta tagagatagt a

41

<210> 3240

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3240

atagtattct tacttagctt rcattctaaa ttttggtccc t

41

&lt;210&gt; 3241

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3241

gtggcattag ggtcctggag ragggctata gagaagccca g

41

&lt;210&gt; 3242

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3242

gaggaggaga ccggagagga sagccagtcc agtcagggcc c

41

&lt;210&gt; 3243

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3243

gtcctactct aacttccact rccgctgctc tgggcagcac a

41

&lt;210&gt; 3244

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<400> 3244

gggcccgttc aatagacaag saaggctaaa ggcagggact g

41

<210> 3245

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3245

taggatttcta tttctctctc yttcactcgt tgattctcct t

41

<210> 3246

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3246

gtgctctgat aggctgtctc mgtcacatgc ttcctgctgg g

41

<210> 3247

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3247

ggtcacatgg cctgagcggc rgggcggctc agtcacctgg g

41

<210> 3248

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3248

gagggctgct tgcccctgcc sgaggacagg ctggcaggga c

41

<210> 3249

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3249

ccctggggag cccttgctgt ktgggcgcag caggaagagc a

41

<210> 3250

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3250

tccctcaggc tcttgctcac rtgggccccag actccttggc t

41

<210> 3251

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3251

ctggggctgg gaaggaggca rggtcctatt gctggggata g

41

&lt;210&gt; 3252

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3252

ggcagggtcc tattgctggg ratagcaacc cactggatct c

41

&lt;210&gt; 3253

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3253

aaagcccaca gggagataag rgtgggagtt agggggcaaa a

41

&lt;210&gt; 3254

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3254

tagggggcaa aacgtcagcc rtagtgcgag cagtcttcaa g

41

&lt;210&gt; 3255

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3255

caaggtgtga gggacagtgc rggtctcttg agcaatagcc a

41

<210> 3256

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3256

cctgcctggg ctactggctt ygggggcttc ttctcaccca c

41

<210> 3257

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3257

aacgctgaac acttcaggcc ygggtgcccga gggagacgct t

41

<210> 3258

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3258

cctagaatca gagagaagcc ytcccaggga gcctgggttc a

41

&lt;210&gt; 3259

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3259

gtccggacaa accccatggg ygtggtaccc ccagccgtgt t

41

&lt;210&gt; 3260

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3260

cccagccgtg ttgctgtgtc yggcctacca gagtgaggcg t

41

&lt;210&gt; 3261

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3261

tccggcctac cagagtgagg ygtggcagta tggggcctgg c

41

&lt;210&gt; 3262

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 3262

aatgttcag aaaatcatgc saggcagtaa gggcagagga a

41

<210> 3263

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3263

aaagtaaagg ttcaggagaa rtctagcctg gggctgctcc c

41

<210> 3264

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3264

cagggcaccc acagcatctg yccagagacc tgcaaagaca g

41

<210> 3265

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3265

caggaatgca aagaaggcaa ytaagtgtct taagaggaag c

41

<210> 3266

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3266

tcagggtggg aggggagtga rgagagacca gctgagcaca c

41

<210> 3267

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3267

ctggctgggc tttagcttgc mgaaagctcc agaacatctt t

41

<210> 3268

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3268

aaagaggaga gccgggggtg yttgtgccag gggttggggg a

41

<210> 3269

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3269

gcttgtgccca ggggttgagg raactgggtc tgattgggcc t

41

&lt;210&gt; 3270

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3270

ctgctgccct ccataggtcc sagactgaat ccttcagagg a

41

&lt;210&gt; 3271

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3271

caggtcttgc ttgcagagt ktttggcagc ggatcctccc c

41

&lt;210&gt; 3272

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3272

cagctgttag tgaggaagct kcgaggggac gatgaggagg g

41

&lt;210&gt; 3273

&lt;211&gt; 41



<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ag

<400> 3273

tggcattttc ctctgtctga ngtcctctta gcccaccta a

41

<210> 3274

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3274

tggcattttc ctctgtctga gtcctcttag cccaccctaa

40

<210> 3275

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3275

caccgatgga agtgtgagtg maggcccagc accccttctc c

41

<210> 3276

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3276

atgagccaaa gcacgcctat rgtagataca cacgtgaaca t

41

<210> 3277

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3277

ctcaaaatga gtcatttgag rggagttaat gaaagactca t

41

<210> 3278

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3278

catctgcaaa gggagaggga rggggtaggg acacagacag g

41

<210> 3279

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3279

tcctgggaga agagagggtg yggccagatg agccgagaac a

41

<210> 3280

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3280

cgtctagggg tgcgaagcca rgttatggcg tggccccaac g

41

<210> 3281

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3281

tcataggttc cagtcccctt ygcaagcccc tcaattctag a

41

<210> 3282

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3282

ctggttctgc ctcagctcag yacagcagag gctgggtcta g

41

<210> 3283

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3283

ggtggtccag gctgctggtg ktcagtaggg ccggccgagc c

41

&lt;210&gt; 3284

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3284

ttcagcagcc taactgaatt racaatagaa tagtcctgca a

41

&lt;210&gt; 3285

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3285

gggatggggc cacctctcca yctctggaga tgccaggctc a

41

&lt;210&gt; 3286

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3286

aagggcagcc tcttgggcca ygaccccttt gctgtctgca g

41

&lt;210&gt; 3287

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3287

ctcttgggcc atgaccctt ygctgtctgc agcaagtggg t

41

<210> 3288

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3288

gaaggaagcg agggaagatc saggaaagga gagaggaca g

41

<210> 3289

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3289

cccgttccc ctcaccctgg ycaggttggc agatctcatg g

41

<210> 3290

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3290

tcccacccag tgtgagcaca ygcagactgg cccagccata t

41

<210> 3291

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3291

gactggccca gccatatagg rgaactccaa gggcagcaca g

41

<210> 3292

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3292

ccacaactgg tggcttgga yacacctgt ttattagctt g

41

<210> 3293

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3293

cacaactggt ggcttggaat racacctgtt tattagcttg t

41

<210> 3294

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3294

acctgcatcc agacgagttc kgggtgttgac agagttcagt t 41

<210> 3295

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3295

tcgggtgttg acagagttca rttccgtgtg gatgcagggc t 41

<210> 3296

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3296

catttatcaa acagccatcc rtgtgcttct tgagcacctg c 41

<210> 3297

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3297

gccaggcatt gttgtaagga yttgaggaca attgtattta a 41

<210> 3298

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3298

taatctccca gtaacactgg mtcagtcagg tccacggtgg g

41

<210> 3299

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3299

cactggatca gtcaggtcca sggtagggaaa caagagtaaa c

41

<210> 3300

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3300

tctcatctgt gatgcatccg ycagacctct gctcccagcc t

41

<210> 3301

<211> 41

<212> DNA

<213> Homo sapiens



&lt;400&gt; 3301

agaatgactg agtgatcaga sctagagagc cccagccccg g

41

&lt;210&gt; 3302

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3302

agccaagcat ttcttgggga yaccaagaaa ccttgcttgg t

41

&lt;210&gt; 3303

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3303

aactccaccc tcaccgtcca ygcagctccc caggagcgtc a

41

&lt;210&gt; 3304

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3304

tccatgcagc tccccaggag ygtcagaggg cagaggaggg g

41

&lt;210&gt; 3305

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 3305

ccgcacagca ggagaatggc yccaagggag ggagggacgg g

41

<210> 3306

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents g

<400> 3306

tctcctgggt gtgtgtgggg ntgtggggcag gctcccctat c

41

<210> 3307

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3307

tctcctgggt gtgtgtgggg tgtggggcag ctcccctatc

40

<210> 3308

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3308

tccaggacag aaacagcagg ygtgagctgc ctctcagagg g

41

<210> 3309

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3309

atgtccctta tgtggcttcc ragaccagaa gtcctggaga g

41

<210> 3310

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents c

<400> 3310

gccacaatct gcagctactc ntcccagctt gctgctgggc t

41

<210> 3311

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3311

gccacaatct gcagctactc tcccagcttg ctgctgggct

40

<210> 3312

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3312

gaaaaggtgc gtggctgggg stggagcaga ggaggggctg c

41

<210> 3313

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3313

aggaggggct gctgtgagtg ygcctgggac atggcagtg t

41

<210> 3314

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3314

gctgctgtga gtgcgcctgg racatggcag tgctgtccac a

41

<210> 3315

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents ct or deletion

<400> 3315

ctggtgtcat ctcccagact ngtcactaaa ccacaatatg a

41

<210> 3316

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3316

agcgtcatca caagcatagc rtggcaggca gcaggcttag g

41

<210> 3317

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents gc or deletion

<400> 3317

tggttcactg ggacagcagc nctggctgga gggggttgga g

41

<210> 3318

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3318

tcaggtcagc ctgggcctga mcatggacag gggccctgga g

41

<210> 3319

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3319

gtcctgtctg ggggtcttaa sggagtcag agacttccac a

41

<210> 3320

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3320

tgatcggggt gcggtttggg kcgacaggac aggagcagag a

41

<210> 3321

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3321

tcggggtgcg gtttggggcg rcaggacagg agcagagaat a

41

<210> 3322

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3322

tgagaagagc agaggggtgt kccgggtgct cgagtcacac c

41

<210> 3323

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3323

acacctgtgt ctgattaggg ytgattaggg gtgcagagtt t

41

<210> 3324

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3324

ttacctcttt cccactcccg ytggaactgtg agttccatga g

41

&lt;210&gt; 3325

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3325

cccaggaacc aggaacagtg rggagccatc accccgccct g

41

&lt;210&gt; 3326

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3326

tcagtgttaa aacatcattt rtgtatgtat gaaaaatatt g

41

&lt;210&gt; 3327

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3327

actaggattg gatggacttg sgatcaggtc tcagctctgt c

41

&lt;210&gt; 3328



<211> 41

<212> DNA

<213> Homo sapiens

<400> 3328

cagctctgtc acctgccaac yggcggcccc atttccctca a

41

<210> 3329

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3329

ccaggtggga gagccatctg yagcgtgggtg acacccatca c

41

<210> 3330

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3330

gacacccatc acacgggtgc ygtgacccgg tgcttatgtc g

41

<210> 3331

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3331

acacccatca cacgggtgcc rtgaccggt gcttatgtcg g

41

&lt;210&gt; 3332

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3332

agccaactgt tttcacagac rtggaagacc acatgttcat a

41

&lt;210&gt; 3333

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3333

ccttcgggcc tgtcatgac rtctctcggt ttgctgatgg g

41

&lt;210&gt; 3334

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3334

ccatgcatta aaccacccc sacactgagt ggcttggaat a

41

&lt;210&gt; 3335

&lt;211&gt; 41

&lt;212&gt; DNA

<213> Homo sapiens

<400> 3335

ataatcagag atttatttta stcacggtct aggttcaatg a

41

<210> 3336

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3336

gtcttgcggg aggcttcctc mgcgtggcag cctcgggggtt g

41

<210> 3337

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3337

caaccaatc ttgcccccg ygtgcagcc cggcacattt t

41

<210> 3338

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3338

gggcctggag gagacactcc mgccaggagg cactgggggc c

41

<210> 3339

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3339

atagcaggga ggagttggcc rtgaagaccc aggggcccgt g 41

<210> 3340

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3340

tgggcccact tatgaatcct scccgagttc cctcagctcc c 41

<210> 3341

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3341

tgaatcctcc ccgagttccc ycagctccct cctaacccta g 41

<210> 3342

<211> 41

<212> DNA

<213> Homo sapiens

&lt;400&gt; 3342

ggggcttccc actgtccaga saaggcggtg ggagctgggg a

41

&lt;210&gt; 3343

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3343

attctgggga gtcctggccc rctatccact gccagggata a

41

&lt;210&gt; 3344

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3344

gagagacagg aggaaatggg ygtgggtcat ctcaggcccc a

41

&lt;210&gt; 3345

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3345

tgggaaacag gtgggaagac rgggattgag ctgggtgagc c

41

&lt;210&gt; 3346

&lt;211&gt; 41

<212> DNA

<213> Homo sapiens

<400> 3346

ggaagcagct cagactccct yagcagatgg ggccgggccc t

41

<210> 3347

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3347

agggtcggct cagaccccgg mgtgctcctg gcatgtccag c

41

<210> 3348

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3348

cggtgggact tgcctagca ygtgccactt ataccagaac a

41

<210> 3349

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3349

gtgggacttg ccctagcacg ygccacttat accagaacag a

41

<210> 3350

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3350

acagatgagt ccatgtcaac ygcttcctga gttcccttg t

41

<210> 3351

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3351

ctgcctctca gccacagcc rggccgctca cactcctccc a

41

<210> 3352

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents 9 to 11 repeats of t

<400> 3352

cacaaaatga gtttgtgggg nacacaaagg cggaatcaca t

41

<210> 3353

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3353

accactaatc aactttctgc ytctatggat ttgcctattc t

41

<210> 3354

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3354

tgctgatctc actgctgtag yggctgcctc tatgcataga c

41

<210> 3355

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents a

<400> 3355

ttccttcagc tgatgattga nctctcagaa ttcaaaagaa a

41



<210> 3356

<211> 40

<212> DNA

<213> Homo sapiens

<400> 3356

ttccttcagc tgatgattga ctctcagaat tcaaaagaaa

40

<210> 3357

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3357

cccaataagg tgagtggatg rtacatggag aaggagggag g

41

<210> 3358

<211> 41

<212> DNA

<213> Homo sapiens

<220>

<221> modified base

<222> 21

<223> n represents t or deletion

<400> 3358

agacatgtga cttttttttt ngaaaggtaa caatcacttt c

41

<210> 3359

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3359

agccgtctcg aatgtctccc yacttcataa ctctccaca c

41

<210> 3360

<211> 41

<212> DNA

<213> Homo sapiens

<400> 3360

ttttttgccc attactccat rgagatcaga atatcactct g

41

### 【 0 0 8 1】

#### 【配列表フリーテキスト】

配列番号39：nはtを表す（存在位置21）。

配列番号64：nはcを表す（存在位置21）。

配列番号580：nはa又は欠失を表す（存在位置21）。

配列番号634：nはa又は欠失を表す（存在位置21）。

配列番号656：nはa又は欠失を表す（存在位置21）。

配列番号658：nはc又は欠失を表す（存在位置21）。

配列番号671：nはa又は欠失を表す（存在位置21）。

配列番号672：nはg又は欠失を表す（存在位置21）。

配列番号673：nはc又は欠失を表す（存在位置21）。

配列番号674：nは(cctgy)<sub>x</sub>を表す（存在位置21）。

配列番号676：nはgaa又は欠失を表す（存在位置21）。

配列番号677：nはag又は欠失を表す（存在位置21）。

配列番号785：nはtaを表す（存在位置21）。

配列番号797：nはacacを表す（存在位置21）。

配列番号806：nはgatttgtggtatccagを表す（存在位置21）。

配列番号808：nはag又は欠失を表す（存在位置21）。

配列番号809：nはta又は欠失を表す（存在位置21）。

配列番号815：nはtを表す（存在位置21）。

配列番号828：nはcagaggctを表す（存在位置21）。

配列番号830：nはca又は欠失を表す（存在位置21）。

配列番号831：nはag又は欠失を表す（存在位置21）。

配列番号843：nはgtaaaを表す（存在位置21）。

配列番号845：nはaを表す（存在位置21）。

配列番号888：nはtcを表す（存在位置21）。

配列番号890：nはt又は欠失を表す（存在位置21）。

配列番号913：nはt又は欠失を表す（存在位置21）。

配列番号932：nはt又は欠失を表す（存在位置21）。

配列番号933：nはt又は欠失を表す（存在位置21）。

配列番号955：nはat又は欠失を表す（存在位置21）。

配列番号956：nはa又は欠失を表す（存在位置21）。

配列番号957：nはc又は欠失を表す（存在位置21）。

配列番号987：nはcを表す（存在位置21）。

配列番号999：nはgtt又は欠失を表す（存在位置21）。

配列番号1164：nはatを表す（存在位置21）。

配列番号1166：nはc又は欠失を表す（存在位置21）。

配列番号1167：nはt又は欠失を表す（存在位置21）。

配列番号1168：nはt又は欠失を表す（存在位置21）。

配列番号1169：nはgを表す（存在位置21）。

配列番号1171：nはcを表す（存在位置21）。

配列番号1173：nはtを表す（存在位置21）。

配列番号1175：nはc又は欠失を表す（存在位置21）。

配列番号1200：nはa又は欠失を表す（存在位置21）。

配列番号1204：nはaを表す（存在位置21）。

配列番号1207：nはttを表す（存在位置21）。

配列番号1210：nはatを表す（存在位置21）。

配列番号1245：nはtを表す（存在位置21）。

配列番号1248：nはt又は欠失を表す（存在位置21）。

配列番号1249：nはtを表す（存在位置21）。

配列番号1251：nはa又は欠失を表す（存在位置21）。

配列番号1252：nはtgt又は欠失を表す（存在位置21）。

配列番号1260：nはt又は欠失を表す（存在位置21）。

配列番号1309：nはa又は欠失を表す（存在位置21）。

配列番号1389：nはg又は欠失を表す（存在位置21）。

配列番号1411：nはa又は欠失を表す（存在位置21）。

配列番号1417：nはaaagを表す（存在位置21）。

配列番号1424：nはgtg又は欠失を表す（存在位置21）。

配列番号1426：nはgg又はtggtgggtggaを表す（存在位置21）。

配列番号1429：nはat又は欠失を表す（存在位置21）。

配列番号1436：nはaを表す（存在位置21）。

配列番号1453：nはc又は欠失を表す（存在位置21）。

配列番号1456：nはggを表す（存在位置21）。

配列番号1465：nはgtc又は欠失を表す（存在位置21）。

配列番号1487：nはt又は欠失を表す（存在位置21）。

配列番号1494：nはttを表す（存在位置21）。

配列番号1497：nはtの9～12回の繰り返しを表す（存在位置21）。

配列番号1499：nはa又は欠失を表す（存在位置21）。

配列番号1501：nはaの10～13回の繰り返しを表す（存在位置21）。

配列番号1504：nはct又は欠失を表す（存在位置21）。

配列番号1507：nはcagatcttcttcagctaatttagaaatgtを表す（存在位置21）。

配列番号1533：nはa又は欠失を表す（存在位置21）。

配列番号1540：nはcを表す（存在位置21）。

配列番号1545：nはtを表す（存在位置21）。

配列番号1552：nはtの9～12回の繰り返しを表す（存在位置21）。

配列番号1555：nはtを表す（存在位置21）。

配列番号1557：nはaaaaaaagaaaaを表す（存在位置21）。

配列番号1558：nはaaaaaaaaaaaaaを表す（存在位置21）。

配列番号1559：nはaaaaaaaaaaaaaを表す（存在位置21）。

配列番号1563：nはt又は欠失を表す（存在位置21）。

配列番号1572：nはcを表す（存在位置21）。

配列番号1574：nはa又は欠失を表す（存在位置21）。

配列番号1575：nはc又は欠失を表す（存在位置21）。

配列番号1596：nはcct又は欠失を表す（存在位置21）。

配列番号1598：nはtcを表す（存在位置21）。

配列番号1616：nはca又は欠失を表す（存在位置21）。

配列番号1638：nはgを表す（存在位置21）。

配列番号1661：nはt又は欠失を表す（存在位置21）。

配列番号1690：nはgccagを表す（存在位置21）。

配列番号1718：nはtを表す（存在位置21）。

配列番号1723：nはc又は欠失を表す（存在位置21）。

配列番号1729：nはtc又は欠失を表す（存在位置21）。

配列番号1740：nはct又は欠失を表す（存在位置21）。

配列番号1771：nはaを表す（存在位置21）。

配列番号1781：nはa又は欠失を表す（存在位置21）。

配列番号1787：nはt又は欠失を表す（存在位置21）。

配列番号1791：nはt又は欠失を表す（存在位置21）。

配列番号1792：nはg又は欠失を表す（存在位置21）。

配列番号1800：nはt又は欠失を表す（存在位置21）。

配列番号1801：nはt又は欠失を表す（存在位置21）。

配列番号1802：nはa又は欠失を表す（存在位置21）。

配列番号1815：nはa又は欠失を表す（存在位置21）。

配列番号1819：nはca又は欠失を表す（存在位置21）。

配列番号1820：nはt又は欠失を表す（存在位置21）。

配列番号1824：nはt又は欠失を表す（存在位置21）。

配列番号1829：nはt又は欠失を表す（存在位置21）。

配列番号1830：nはc又は欠失を表す（存在位置21）。

配列番号1838：nはa又は欠失を表す（存在位置21）。

配列番号1840：nはt又は欠失を表す（存在位置21）。

配列番号1847：nはgatt又は欠失を表す（存在位置21）。

配列番号1848：nはtを表す（存在位置21）。

配列番号1853：nはt又は欠失を表す（存在位置21）。

配列番号1854：nはgtを表す（存在位置21）。

配列番号1857：nはa又は欠失を表す（存在位置21）。

配列番号1858：nはa又は欠失を表す（存在位置21）。

配列番号1862：nはt又は欠失を表す（存在位置21）。

配列番号1865：nはat又は欠失を表す（存在位置21）。

配列番号1871：nはa又は欠失を表す（存在位置21）。

配列番号1874：nはt又は欠失を表す（存在位置21）。

配列番号1877：nはat又は欠失を表す（存在位置21）。

配列番号1878：nはa又は欠失を表す（存在位置21）。

配列番号1879：nはtの12～14の繰り返しを表す（存在位置21）。

配列番号1882：nはt又は欠失を表す（存在位置21）。

配列番号1884：nはcac又は欠失を表す（存在位置21）。

配列番号1891：nはccaを表す（存在位置21）。

配列番号1919：nはt又は欠失を表す（存在位置21）。

配列番号1949：nはc又は欠失を表す（存在位置21）。

配列番号1957：nはaaaa又は欠失を表す（存在位置21）。

配列番号1970：nはc又は欠失を表す（存在位置21）。

配列番号1980：nはtの7～9の繰り返しを表す（存在位置21）。

配列番号1981：nはa又は欠失を表す（存在位置21）。

配列番号1993：nはtaac又は欠失を表す（存在位置21）。

配列番号1994：nはctctttを表す（存在位置21）。

配列番号1995：nはctを表す（存在位置21）。

配列番号2002：nはa又は欠失を表す（存在位置21）。

配列番号2005：nはt又は欠失を表す（存在位置21）。

配列番号2008：nはg又は欠失を表す（存在位置21）。

配列番号2011：nはaattagaa又は欠失を表す（存在位置21）。

配列番号2012：nはttttaaaa又はttttaaを表す（存在位置21）。

配列番号2015：nはt又は欠失を表す（存在位置21）。

配列番号2020：nはt又は欠失を表す（存在位置21）。

配列番号2024：nはg又は欠失を表す（存在位置21）。

配列番号2025：nはt又は欠失を表す（存在位置21）。

配列番号2030：nはaaa又は欠失を表す（存在位置21）。

配列番号2031：nはa又は欠失を表す（存在位置21）。

配列番号2042：nはcを表す（存在位置21）。

配列番号2072：nはa又は欠失を表す（存在位置21）。

配列番号2074：nはa又は欠失を表す（存在位置21）。

配列番号2243：nはtcaの14～16の繰り返しを表す（存在位置21）。

配列番号2244：nはaの8～10の繰り返しを表す（存在位置21）。

配列番号2245：nはcacagtcac又は欠失を表す（存在位置21）。

配列番号2246：nはtt又は欠失を表す（存在位置21）。

配列番号2247：nはaの10～12の繰り返しを表す（存在位置21）。

配列番号2248：nはc又は欠失を表す（存在位置21）。

配列番号2249：nはaの16～18の繰り返しを表す（存在位置21）。

配列番号2250：nはgを表す（存在位置21）。

配列番号2252 : nはc又は欠失を表す (存在位置21) 。  
配列番号2253 : nはt又は欠失を表す (存在位置21) 。  
配列番号2254 : nはa又は欠失を表す (存在位置21) 。  
配列番号2255 : nはtgを表す (存在位置21) 。  
配列番号2257 : nはtの10～13の繰り返しを表す (存在位置21) 。  
配列番号2258 : nはgtの11～13の繰り返しを表す (存在位置21) 。  
配列番号2259 : nはa又は欠失を表す (存在位置21) 。  
配列番号2260 : nはg又は欠失を表す (存在位置21) 。  
配列番号2261 : nはg又は欠失を表す (存在位置21) 。  
配列番号2262 : nはtの9～11の繰り返しを表す (存在位置21) 。  
配列番号2263 : nはgを表す (存在位置21) 。  
配列番号2265 : nはtt又は欠失を表す (存在位置21) 。  
配列番号2266 : nはaの7～9の繰り返しを表す (存在位置21) 。  
配列番号2267 : nはtの9～11の繰り返しを表す (存在位置21) 。  
配列番号2268 : nはaの9～10の繰り返しを表す (存在位置21) 。  
配列番号2269 : nはgt又は欠失を表す (存在位置21) 。  
配列番号2270 : nはa又は欠失を表す (存在位置21) 。  
配列番号2271 : nはtを表す (存在位置21) 。  
配列番号2273 : nはa又は欠失を表す (存在位置21) 。  
配列番号2274 : nはct又は欠失を表す (存在位置21) 。  
配列番号2275 : nはg又は欠失を表す (存在位置21) 。  
配列番号2276 : nはa又は欠失を表す (存在位置21) 。  
配列番号2277 : nはa又は欠失を表す (存在位置21) 。  
配列番号2278 : nはa又は欠失を表す (存在位置21) 。  
配列番号2279 : nはc又は欠失を表す (存在位置21) 。  
配列番号2280 : nはaaag又は欠失を表す (存在位置21) 。  
配列番号2348 : nはtの22～26の繰り返しを表す (存在位置21) 。  
配列番号2349 : nはgの8～10の繰り返しを表す (存在位置21) 。  
配列番号2350 : nはcの6～7の繰り返しを表す (存在位置21) 。



配列番号2351：nはaの12～14の繰り返しを表す（存在位置21）。

配列番号2427：nはcaccaggcagcagactctgatgaggaggggaggggggを表す（存在位置21）。

配列番号2429：nはgを表す（存在位置21）。

配列番号2474：nはtcac又は欠失を表す（存在位置21）。

配列番号2475：nはt又は欠失を表す（存在位置21）。

配列番号2476：nはtの9～11の繰り返しを表す（存在位置21）。

配列番号2477：nはaの7～8の繰り返しを表す（存在位置21）。

配列番号2495：nはtの13～16の繰り返しを表す（存在位置21）。

配列番号2496：nはtの9～10の繰り返しを表す（存在位置21）。

配列番号2497：nはtの14～16の繰り返しを表す（存在位置21）。

配列番号2498：nはtの13～17の繰り返しを表す（存在位置21）。

配列番号2499：nはtを表す（存在位置21）。

配列番号2501：nはaの8～9の繰り返しを表す（存在位置21）。

配列番号2502：nはtの8～9の繰り返しを表す（存在位置21）。

配列番号2503：nはgcagtattactgtagt又は欠失を表す（存在位置21）。

配列番号2504：nはtの13～14の繰り返しを表す（存在位置21）。

配列番号2505：nはtの9～10の繰り返しを表す（存在位置21）。

配列番号2506：nはtの10～11の繰り返しを表す（存在位置21）。

配列番号2524：nはt又は欠失を表す（存在位置21）。

配列番号2525：nはtの12～15の繰り返しを表す（存在位置21）。

配列番号2586：nはa又は欠失を表す（存在位置21）。

配列番号2587：nはat又は欠失を表す（存在位置21）。

配列番号2594：nはt又は欠失を表す（存在位置21）。

配列番号2595：nはttc又は欠失を表す（存在位置21）。

配列番号2606：nはcttを表す（存在位置21）。

配列番号2651：nはcの9～11の繰り返しを表す（存在位置21）。

配列番号2652：nはaの15～21の繰り返しを表す（存在位置21）。

配列番号2653：nはgggggtggcggggtggg又は欠失を表す（存在位置21）。

配列番号2654：nはt又は欠失を表す（存在位置21）。

配列番号2655：nはaを表す（存在位置21）。

配列番号2657：nはa又は欠失を表す（存在位置21）。

配列番号2658：nはtの10～12の繰り返しを表す（存在位置21）。

配列番号2659：nはttを表す（存在位置21）。

配列番号2661：nはtccctccttgaagctgacgt又は欠失を表す（存在位置21）。

配列番号2662：nはcaの12～18の繰り返しを表す（存在位置21）。

配列番号2685：nはaの18～20の繰り返しを表す（存在位置21）。

配列番号2686：nはaaを表す（存在位置21）。

配列番号2688：nはt又は欠失を表す（存在位置21）。

配列番号2689：nはtの9～13の繰り返しを表す（存在位置21）。

配列番号2690：nはaa又は欠失を表す（存在位置21）。

配列番号2691：nはttgaca又はgtccaatatを表す（存在位置21）

配列番号2692：nはcta又は欠失を表す（存在位置21）。

配列番号2693：nはtの9～10の繰り返しを表す（存在位置21）。

配列番号2694：nはgagatgttgtggctcacatを表す（存在位置21）。

配列番号2696：nはcc又は欠失を表す（存在位置21）。

配列番号2697：nはact又は欠失を表す（存在位置21）。

配列番号2755：nはtat又は欠失を表す（存在位置21）。

配列番号2756：nはacの14～17の繰り返しを表す（存在位置21）。

配列番号2757：nはaの16～27の繰り返しを表す（存在位置21）。

配列番号2758：nはt又は欠失を表す（存在位置21）。

配列番号2759：nはaの8～10の繰り返しを表す（存在位置21）。

配列番号2760：nはgtの9～11の繰り返しを表す（存在位置21）。

配列番号2761：nはaa又は欠失を表す（存在位置21）。

配列番号2762：nはt又は欠失を表す（存在位置21）。

配列番号2763：nはacの8～12の繰り返しを表す（存在位置21）。

配列番号2764：nはa又は欠失を表す（存在位置21）。

配列番号2810：nはaを表す（存在位置21）。

配列番号2812：nはaa又は欠失を表す（存在位置21）。

配列番号2813：nはca又は欠失を表す（存在位置21）。

配列番号2814：nはt又は欠失を表す（存在位置21）。

配列番号2815：nはtgtgtg又は欠失を表す（存在位置21）。

配列番号2912：nはaを表す（存在位置21）。

配列番号2914：nはgを表す（存在位置21）。

配列番号2916：nはactt又は欠失を表す（存在位置21）。

配列番号2917：nはttta又は欠失を表す（存在位置21）。

配列番号2918：nはaの11～13の繰り返しを表す（存在位置21）。

配列番号2919：nはtの8～10の繰り返しを表す（存在位置21）。

配列番号2920：nはaの12～14の繰り返しを表す（存在位置21）。

配列番号2921：nはcttgta又は欠失を表す（存在位置21）。

配列番号2922：nはaの9～10の繰り返しを表す（存在位置21）。

配列番号2923：nはctt又は欠失を表す（存在位置21）。

配列番号2924：nはcttを表す（存在位置21）。

配列番号2926：nはa又は欠失を表す（存在位置21）。

配列番号2927：nはaの9～11の繰り返しを表す（存在位置21）。

配列番号2928：nはtgt又は欠失を表す（存在位置21）。

配列番号2929：nはaの24～27の繰り返しを表す（存在位置21）。

配列番号2930：nはtaの10～21の繰り返しを表す（存在位置21）。

配列番号2931：nはaの8～10の繰り返しを表す（存在位置21）。

配列番号2932：nはaの11～13の繰り返しを表す（存在位置21）。

配列番号2933：nはaの8～10の繰り返しを表す（存在位置21）。

配列番号2999：nはtatc又は欠失を表す（存在位置21）。

配列番号3000：nはatatcacttggtatctg又は欠失を表す（存在位置21）。

配列番号3001：nはttta又は欠失を表す（存在位置21）。

配列番号3002：nはtを表す（存在位置21）。

配列番号3004：nはg又は欠失を表す（存在位置21）。

配列番号3005：nはa又は欠失を表す（存在位置21）。

配列番号3006：nはaの9～11の繰り返しを表す（存在位置21）。

配列番号3007：nはg又は欠失を表す（存在位置21）。

配列番号3008：nはatの4～5の繰り返しを表す（存在位置21）。

配列番号3009：nはtの7～8の繰り返しを表す（存在位置21）。

配列番号3010：nはtの19～23の繰り返しを表す（存在位置21）。

配列番号3011：nはt又は欠失を表す（存在位置21）。

配列番号3012：nはtgat又は欠失を表す（存在位置21）。

配列番号3013：nはtの8～10の繰り返しを表す（存在位置21）。

配列番号3014：nはa又は欠失を表す（存在位置21）。

配列番号3021：nはaの13～15の繰り返しを表す（存在位置21）。

配列番号3022：nはtの12～15の繰り返しを表す（存在位置21）。

配列番号3042：nはgを表す（存在位置21）。

配列番号3044：nはa又は欠失を表す（存在位置21）。

配列番号3046：nはg又は欠失を表す（存在位置21）。

配列番号3047：nはtの11～13の繰り返しを表す（存在位置21）。

配列番号3049：nはa又は欠失を表す（存在位置21）。

配列番号3051：nはtの9～11の繰り返しを表す（存在位置21）。

配列番号3054：nはt又は欠失を表す（存在位置21）。

配列番号3056：nはt又は欠失を表す（存在位置21）。

配列番号3060：nはt又は欠失を表す（存在位置21）。

配列番号3065：nはaagaを表す（存在位置21）。

配列番号3069：nはaaaa又は欠失を表す（存在位置21）。

配列番号3073：nはtの9～11の繰り返しを表す（存在位置21）。

配列番号3081：nはa又は欠失を表す（存在位置21）。

配列番号3103：nはtの11～13の繰り返しを表す（存在位置21）。

配列番号3119：nはactaを表す（存在位置21）。

配列番号3125：nはgtg又は欠失を表す（存在位置21）。

配列番号3130：nはtの11～12の繰り返しを表す（存在位置21）。

配列番号3140：nはtta又は欠失を表す（存在位置21）。

配列番号3154：nはgを表す（存在位置21）。

配列番号3156：nはaを表す（存在位置21）。

配列番号3158：nはcct又は欠失を表す（存在位置21）。

配列番号3169：nはggaを表す（存在位置21）。

配列番号3179：nはtの12～14の繰り返しを表す（存在位置21）。

配列番号3184：nはtの16～17の繰り返しを表す（存在位置21）。

配列番号3196：nはgを表す（存在位置21）。

配列番号3273：nはagを表す（存在位置21）。

配列番号3306：nはgを表す（存在位置21）。

配列番号3310：nはcを表す（存在位置21）。

配列番号3315：nはct又は欠失を表す（存在位置21）。

配列番号3317：nはgc又は欠失を表す（存在位置21）。

配列番号3352：nはtの9～11の繰り返しを表す（存在位置21）。

配列番号3355：nはaを表す（存在位置21）。

配列番号3358：nはt又は欠失を表す（存在位置21）。

#### 【図面の簡単な説明】

##### 【図 1】

TaqMan プローブを示す図である。

##### 【図 2】

TaqMan PCR法の概要を示す図である。

##### 【図 3】

蛍光色素を付したプローブを示す図である。

##### 【図 4】

インベーター法の概要を示す図である。

##### 【図 5】

フレットプローブを示す図である。

##### 【図 6】

インベーター法の概要を示す図である。

##### 【図 7】

アレルとマッチしないプローブを示す図である。

【図 8】

ライゲーション反応によるアレルの識別の概要を示す図である。

【図 9】

ATP結合カセットサブファミリーBメンバー 2 (ABCB2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 0】

ATP結合カセットサブファミリーBメンバー 4 (ABCB4) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1】

ミクロソームエポキシドヒドロラーゼ1 (EPHX1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 2】

細胞質エポキシドヒドロラーゼ (EPHX2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3】

グアニジノアセテートN-メチルトランスフェラーゼ (GAMT) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 4】

ニコチンアミドN-メチルトランスフェラーゼ (NNMT) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 5】

フェニルエタノールアミンN-メチルトランスフェラーゼ (PNMT) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 6】

ホスファチジルエタノールアミンN-メチルトランスフェラーゼ (PEMT) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 7】

グルタチオン-S-トランスフェラーゼ3 (GSTM3) 遺伝子の構造とSNPの存在位置

を示す図である。

【図 1 8】

アルデヒドデヒドロゲナーゼ5 (ALDH5) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 9】

トランスグルタミナーゼ1 (TGM1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 0】

ガンマ-グルタミルトランスフェラーゼ1 (GGT1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 1】

NAD(P)H: キノンオキシドレダクターゼ1 (NQO1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 2】

キノンオキシドレダクターゼ相同体の p53 誘導遺伝子3 (PIG3) の構造と SNP の存在位置を示す図である。

【図 2 3】

NRH: キノンオキシドレダクターゼ2 (NQO2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 4】

スルホトランスフェラーゼ1A1 (SULT1A1/STP1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 5】

スルホトランスフェラーゼ1A2 (SULT1A2/STP2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 6】

スルホトランスフェラーゼ-関連タンパク質3 (SULTX3) 遺伝子の構造と SNP の存在位置を示す図である。

【図 2 7】

チロシルタンパク質スルホトランスフェラーゼ1(TPST1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 2 8】

チロシルタンパク質スルホトランスフェラーゼ2(TPST2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 2 9】

スルホトランスフェラーゼ1A3(SULT1A3/STM/HAST) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 0】

セレブロシドスルホトランスフェラーゼ(CST) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 1】

スルホトランスフェラーゼ1C1(SULT1C1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 2】

スルホトランスフェラーゼ1C2(SULT1C2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 3】

甲状腺ホルモンスルホトランスフェラーゼ(ST1B2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 4】

炭水化物スルホトランスフェラーゼ2(CHST2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 5】

スルホトランスフェラーゼ2A1(SULT2A1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 3 6】

スルホトランスフェラーゼ2B1(SULT2B1) 遺伝子の構造とSNPの存在位置を示す図である。



**【図 3 7】**

炭水化物スルホトランスフェラーゼ4(CHST4) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 3 8】**

炭水化物スルホトランスフェラーゼ5(CHST5) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 3 9】**

HNK-スルホトランスフェラーゼ(NHK-1ST) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 0】**

エストロゲンスルホトランスフェラーゼ(STE) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 1】**

アルコールデヒドロゲナーゼ1(ADH1) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 2】**

アルコールデヒドロゲナーゼ2(ADH2) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 3】**

アルコールデヒドロゲナーゼ3(ADH3) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 4】**

アルコールデヒドロゲナーゼ6(ADH6) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 5】**

アルコールデヒドロゲナーゼ7(ADH7) 遺伝子の構造とSNPの存在位置を示す図である。

**【図 4 6】**

短鎖アルコールデヒドロゲナーゼファミリー遺伝子(HEP27)の構造とSNPの存在

位置を示す図である。

【図 4 7】

L1 細胞接着分子(L1CAM) 遺伝子の構造とSNPの存在位置を示す図である。

【図 4 8】

アリールアルキルアミン N-アセチルトランスフェラーゼ(AANAT) 遺伝子の構造とSNPの存在位置を示す図である。

【図 4 9】

サッカロミセス・セレビシエ(*Saccharomyces cerevisiae*)のN-アセチルトランスフェラーゼ相同体(ARD1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 0】

N-アセチルトランスフェラーゼ(NAT1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 1】

N-アセチルトランスフェラーゼ2(NAT2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 2】

グランザイムA(GZMA) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 3】

グランザイムB(GZMB) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 4】

エステラーゼD/ホルミルグルタチオンヒドロラーゼ(ESD) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 5】

ドリシル-ジホスホオリゴサッカライド-タンパク質グリコシルトランスフェラーゼ(DDOST) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 6】

ミクロソームグルタチオン-S-トランスフェラーゼ(MGST1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 5 7】

アルコールデヒドロゲナーゼ 5 (ADH5) 遺伝子の構造と SNP の存在位置を示す図である。

【図 5 8】

グルタチオン S トランスフェラーゼ M 1 (GSTM1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 5 9】

グルタチオン S トランスフェラーゼ M 2 (GSTM2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 0】

グルタチオン S トランスフェラーゼ M 4 (GSTM4) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 1】

グルタチオン S トランスフェラーゼ Z 1 (GSTZ1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 2】

グルタチオン S トランスフェラーゼ P i (GSTZPi) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 3】

グルタチオン S トランスフェラーゼ T 1 (GSTT1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 4】

ミクロソームのグルタチオン S トランスフェラーゼ 1 like 1 (MGST1L1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 5】

ミクロソームのグルタチオン S トランスフェラーゼ T 2 (MGST2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 6 6】

ミクロソームのグルタチオン S トランスフェラーゼ T 3 (MGST3) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 6 7】

グルタチオン S トランスフェラーゼ A 1 (GSTA1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 6 8】

グルタチオン S トランスフェラーゼ A 4 (GSTA4) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 6 9】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 1 (NDUFA1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 0】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 2 (NDUFA2) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 1】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 3 (NDUFA3) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 2】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 5 (NDUFA5) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 3】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 6 (NDUFA6) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 4】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 7 (NDUFA7) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 5】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 8 (NDUFA8) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 7 6】

NADH-ユビキノン オキシドリダクターゼ 1  $\alpha/\beta$  サブコンプレックス 1 (

NDUFAB1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 7 7】

N A D H - ユビキノン オキシドリダクターゼ 1  $\alpha$  サブコンプレックス 9 (NDUFA9) 遺伝子の構造とSNPの存在位置を示す図である。

【図 7 8】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 1 (NDUFS1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 7 9】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 3 (NDUFS3) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 0】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 4 (NDUFS4) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 1】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 5 (NDUFS5) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 2】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 6 (NDUFS6) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 3】

N A D H - ユビキノン オキシドリダクターゼ F e - S タンパク質 8 (NDUFS8) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 4】

N A D H - ユビキノン オキシドリダクターゼ 1  $\beta$  サブコンプレックス 3 (NDUFB3) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 5】

N A D H - ユビキノン オキシドリダクターゼ 1  $\beta$  サブコンプレックス 5 (NDUFB5) 遺伝子の構造とSNPの存在位置を示す図である。

【図 8 6】

NADH-ユビキノン オキシドリダクターゼ 1  $\beta$  サブコンプレックス 7 (NDUFB7) 遺伝子の構造と SNP の存在位置を示す図である。

【図 8 7】

ATP 結合カセット サブファミリー A メンバー 1 (ABCA1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 8 8】

カテコール-O-メチルトランスフェラーゼ (COMT) 遺伝子の構造と SNP の存在位置を示す図である。

【図 8 9】

ヒスタミン N-メチルトランスフェラーゼ (HNMT) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 0】

チトクローム P 4 5 0 サブファミリー 1 (アロマティック化合物誘発性) ポリペプチド 1 (CYP1A1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 1】

チトクローム P 4 5 0 サブファミリー 1 (アロマティック化合物誘発性) ポリペプチド 2 (CYP1A2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 2】

チトクローム P 4 5 0 サブファミリー 1 (ジオキシン誘発性) ポリペプチド 1 (CYP1B1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 3】

アリルアセタミド デアセチラーゼ (AADAC) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 4】

ニューロパチーターゲットエステラーゼ (NTE) 遺伝子の構造と SNP の存在位置を示す図である。

【図 9 5】

ATP 結合カセット サブファミリー C (CFTR/MRP) メンバー 2 (MRP2) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 9 6】**

A T P 結合カセット サブファミリーBメンバー 1 (ABCB1) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 9 7】**

A T P 結合カセット サブファミリーBメンバー 3 (ABCB3) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 9 8】**

A T P 結合カセット サブファミリーBメンバー7(ABCB7) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 9 9】**

A T P 結合カセット サブファミリーBメンバー 8 (ABCB8) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 0】**

A T P 結合カセット サブファミリーBメンバー 9 (ABCB9) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 1】**

A T P 結合カセット サブファミリーBメンバー 1 0 (ABCB10) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 2】**

A T P 結合カセット サブファミリーBメンバー 1 1 (ABCB11) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 3】**

チトクローム P 4 5 0 サブファミリーIVB ポリペプチド 1 (CYP4B1) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 4】**

チトクローム P 4 5 0 サブファミリーXXVIIA ポリペプチド 1 (CYP27A1) 遺伝子の構造と SNP の存在位置を示す図である。

**【図 1 0 5】**

チトクローム P 4 5 0 サブファミリーIVF ポリペプチド 2 (CYP4F2) 遺伝子の

構造とSNPの存在位置を示す図である。

【図 1 0 6】

チトクローム P 4 5 0 サブファミリー 4F ポリペプチド 3 (CYP4F3) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 0 7】

チトクローム P 4 5 0 サブファミリー 4F ポリペプチド 8 (CYP4F8) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 0 8】

アルデヒドデヒドロゲナーゼ 1 (ALDH1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 0 9】

アルデヒドデヒドロゲナーゼ 2 (ALDH2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 0】

アルデヒドデヒドロゲナーゼ 7 (ALDH7) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 1】

アルデヒドデヒドロゲナーゼ 8 (ALDH8) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 2】

アルデヒドデヒドロゲナーゼ 9 (ALDH9) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 3】

アルデヒドデヒドロゲナーゼ 1 0 (ALDH10) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 4】

A T P 結合カセット サブファミリー C メンバー 7 (ABCC7) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 1 5】



A T P 結合カセット サブファミリーCメンバー 8 (ABCC8) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 1 6】

A T P 結合カセット サブファミリーCメンバー 9 (ABCC9) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 1 7】

カルボキシルエステラーゼ 1 (CES1) 遺伝子の構造と SNP の存在位置を示す図である

【図 1 1 8】

A T P 結合カセット サブファミリーAメンバー 4 (ABCA4) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 1 9】

A T P 結合カセット サブファミリーAメンバー 7 (ABCA7) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 2 0】

A T P 結合カセット サブファミリーGメンバー 1 (ABCG1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 2 1】

A T P 結合カセット サブファミリーGメンバー 2 (ABCG2) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 2 2】

A T P 結合カセット サブファミリーGメンバー 4 (ABCG4) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 2 3】

A T P 結合カセット サブファミリーEメンバー 1 (ABCE1) 遺伝子の構造と SNP の存在位置を示す図である。

【図 1 2 4】

カルボハイドレート スルホトランスフェラーゼ 1 (CHST1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 2 5】

カルボハイドレート スルホトランスフェラーゼ 3 (CHST3) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 2 6】

NADH : ユビキノン デハイドロゲナーゼフラボプロテイン 1 (NDUFV1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 2 7】

NADH : ユビキノン オキシドレダクターゼ フラボプロテイン 2 (NDUFV2) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 2 8】

NADH : ユビキノン オキシドレダクターゼ フラボプロテイン 3 (NDUFV3) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 2 9】

NADH : ユビキノン オキシドレダクターゼ A10 (NDUFA10) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 3 0】

high-mobility group protein 17-like 1 (HMG17L1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 3 1】

UDP グリコシルトランスフェラーゼ 2 ファミリー ポリペプチド A1 (UGT2A1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 3 2】

ヒト オーガニック アニオン トランスポーター ポリペプチド 1 (hOATP1) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 3 3】

ヒト オーガニック アニオン トランスポーター ポリペプチド 2 (hOATP2) 遺伝子の構造と SNP の存在位置を示す図である。

## 【図 1 3 4】

ヒト オーガニック アニオン トランスポーター ポリペプチド 8 (hOATP8)

遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3 5】

ヒト オーガニック アニオン トランスポーター 1 (hOAT1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3 6】

ヒト オーガニック アニオン トランスポーター 2 (hOAT2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3 7】

ヒト オーガニック アニオン トランスポーター 3 (hOAT3) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3 8】

アルデヒド デヒドロゲナーゼ 1 ファミリー メンバーA2 (ALDH1A2) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 3 9】

アルデヒド デヒドロゲナーゼ 1 ファミリー メンバーA3 (ALDH1A3) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 4 0】

フォルミルテトラヒドロフォレート デヒドロゲナーゼ (FTHFD/ALDH1L1) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 4 1】

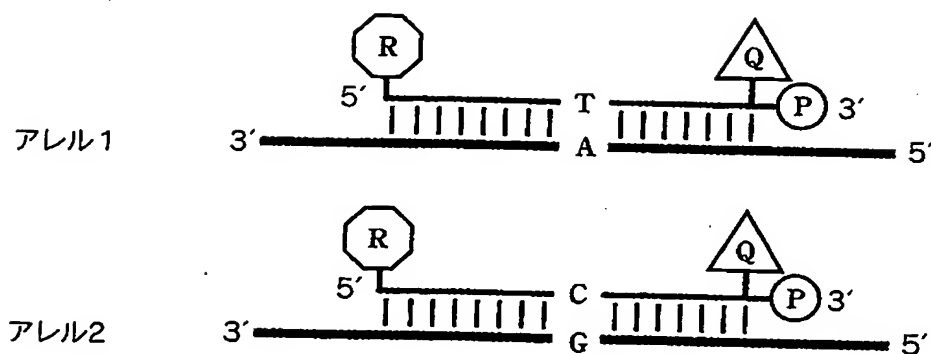
チトクローム P 4 5 0 サブファミリー IIIA (アロマティック化合物誘発性) ポリペプチド 4 (CYP3A4) 遺伝子の構造とSNPの存在位置を示す図である。

【図 1 4 2】

異なる 2 グループの被験者についてインベダー法によりタイピングを行った結果を示す図である。

【書類名】 図面

【図 1】

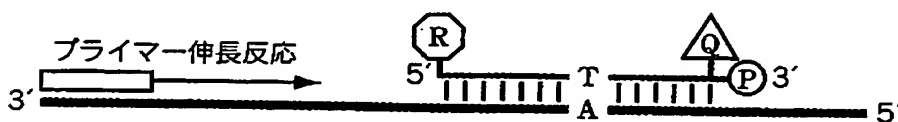


【図 2】

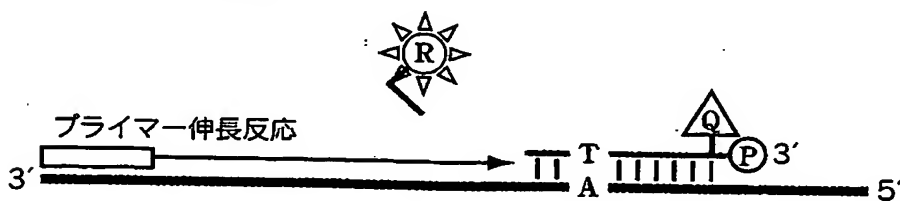
a. ハイブリダイゼーション



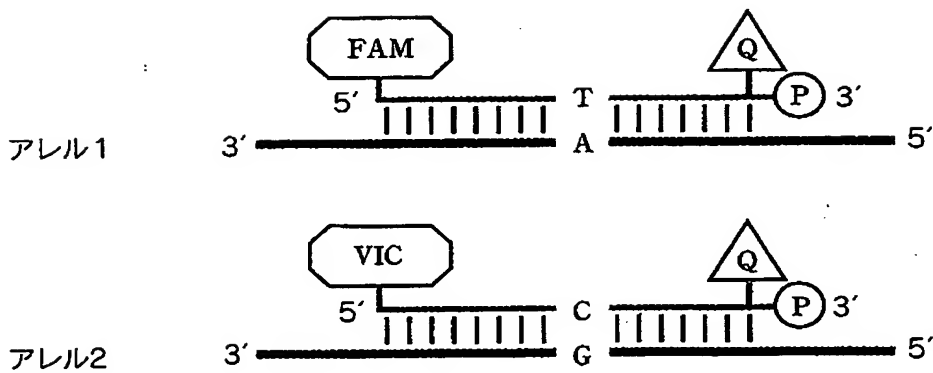
b. PCR反応



c. 5'ヌクレアーゼ活性

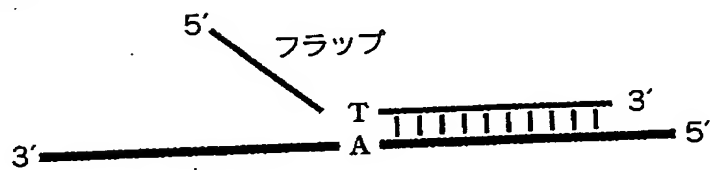


【図 3】



【図 4】

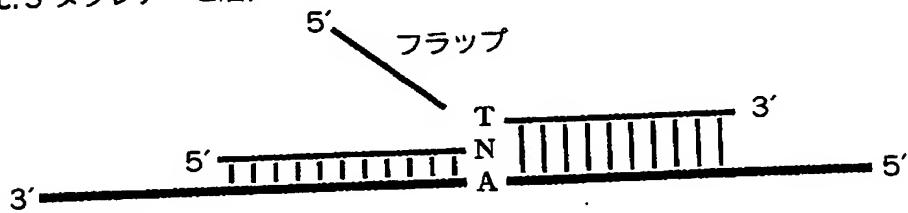
a. アレルプローブ



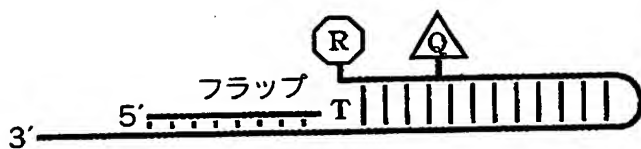
b. インベータープローブ



c. 5'ヌクレアーゼ活性

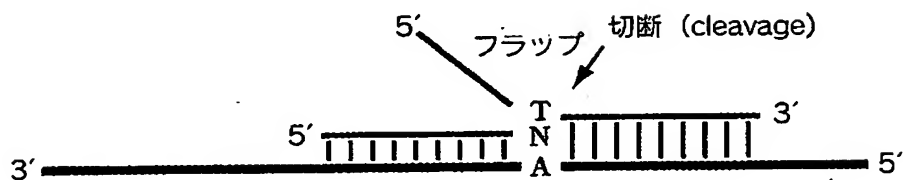


【図5】

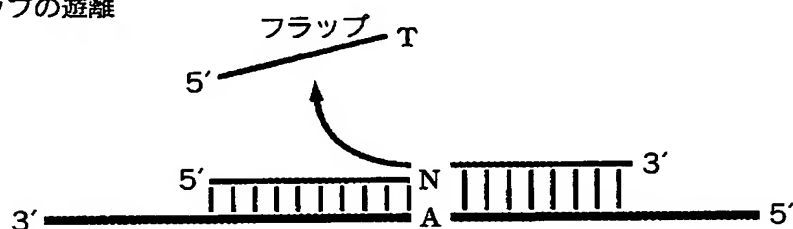


【図6】

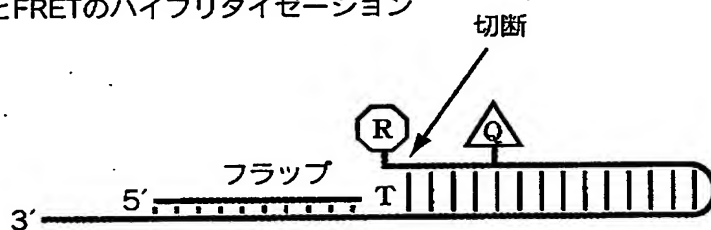
a. cleavageによるアレルプロブの切断



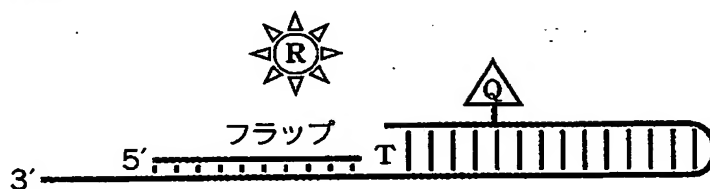
b. フラップの遊離



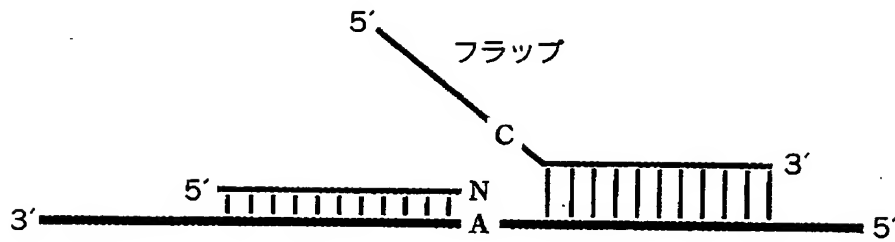
c. フラップとFRETのハイブリダイゼーション



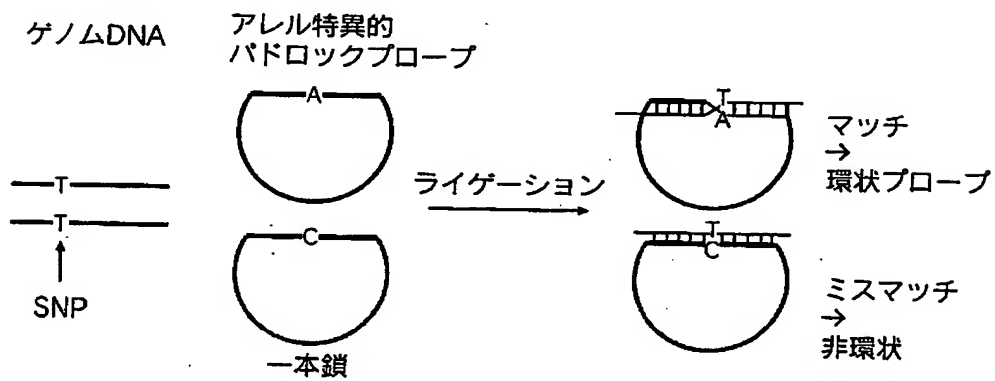
d. 蛍光色素の遊離



【図7】



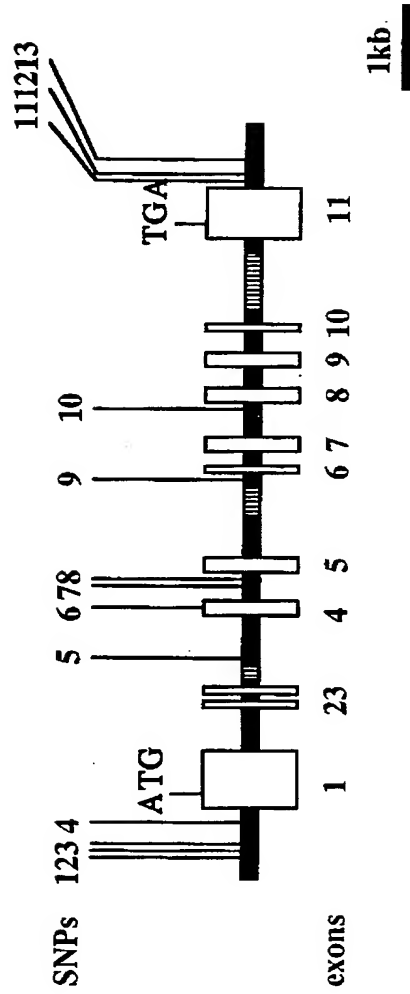
【図8】



【図 9】

*ATP binding cassette, sub-family B, member 2 (ABCB2)*

ACCESSION X66401

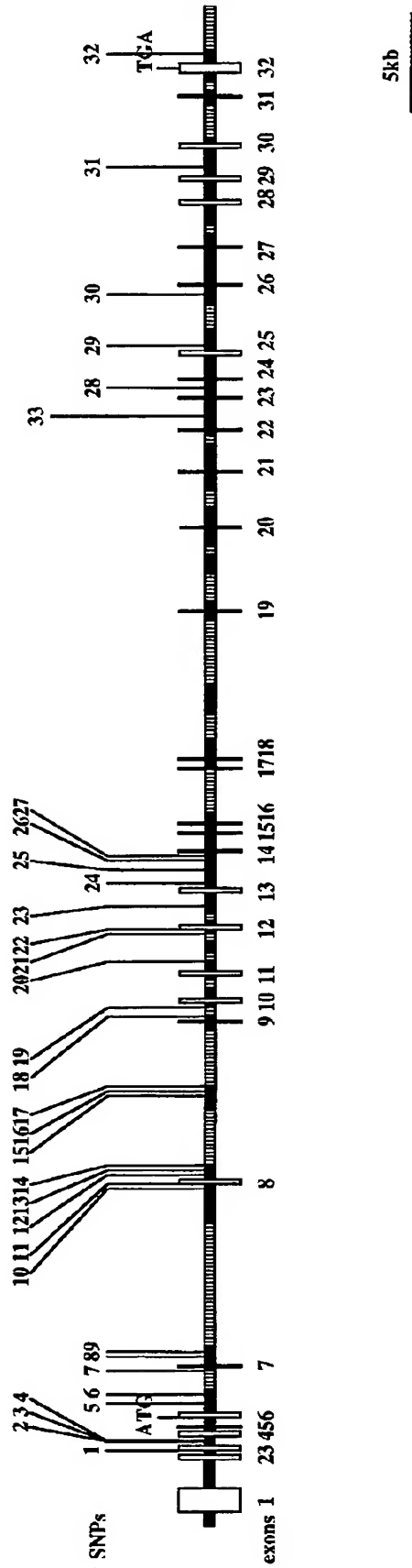


【図 10】



*ATP-binding cassette, sub-family B, member 4 (ABCB4)*

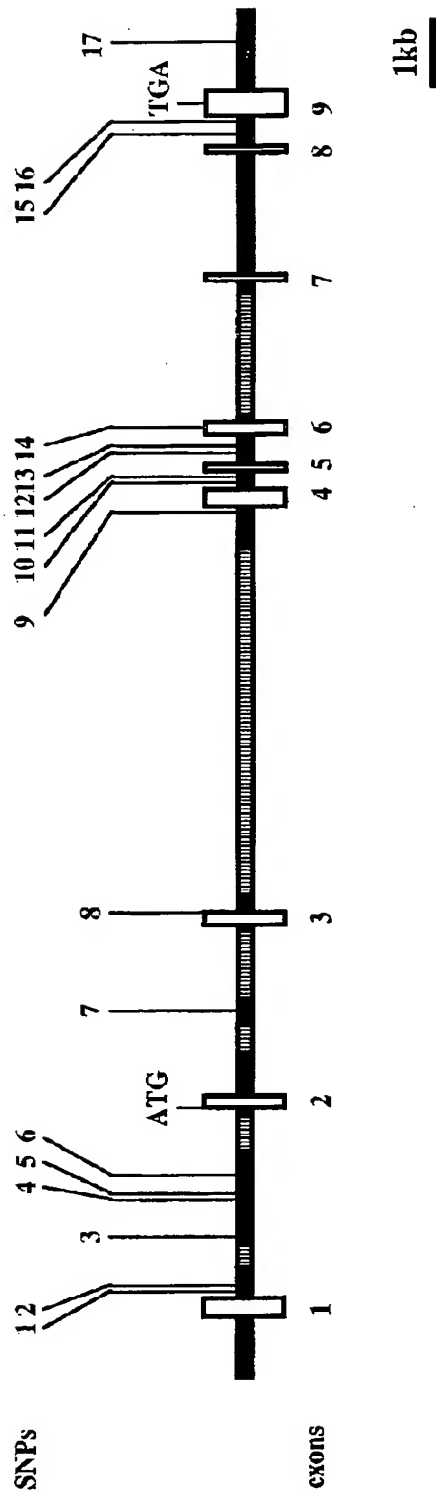
ACCESSION AC079591  
AC079303  
AC005045



【図 11】

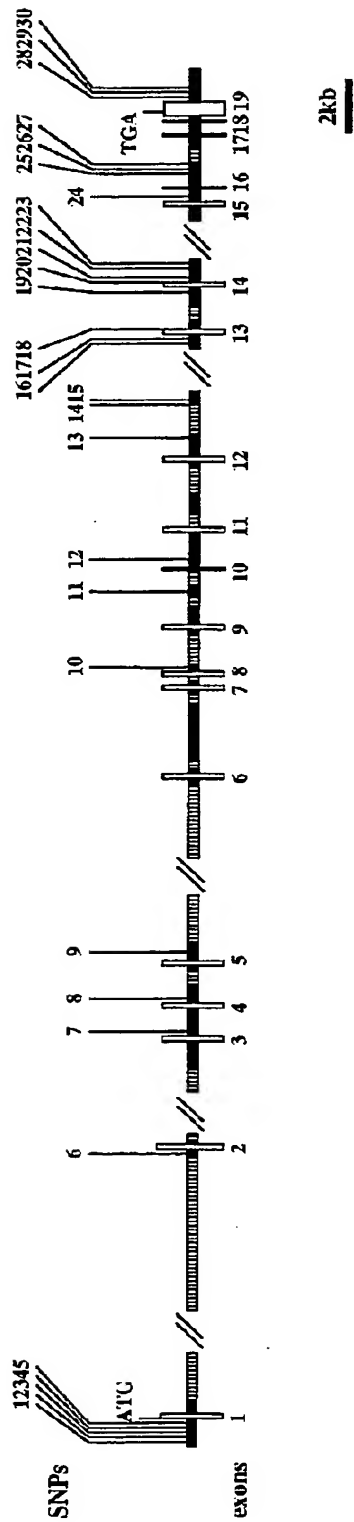
*Epoxide hydrolase 1, microsomal (EPHX1)*

ACCESSION AC058782



【図 12】

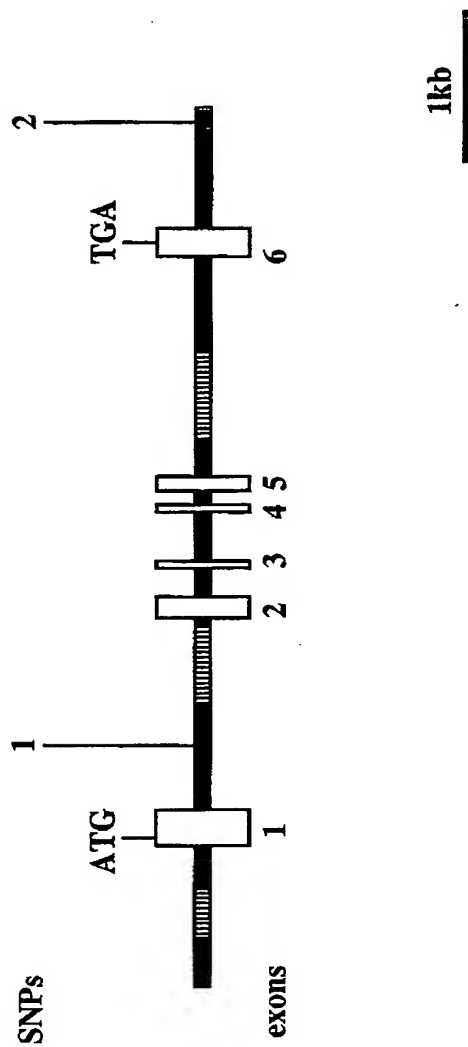
*Epoxide hydrolase, cytoplasmic (EPHX2)*  
ACCESSION AC010856



【図 13】

***Guanidinoacetate N-methyltransferase (GAMT)***

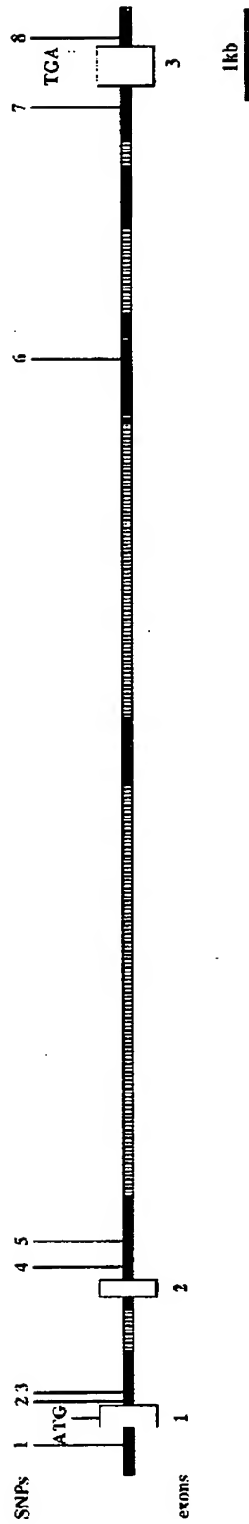
**ACCESSION NT\_000879**



【図 14】

*Nicotinamide N-methyltransferase (NNMT)*

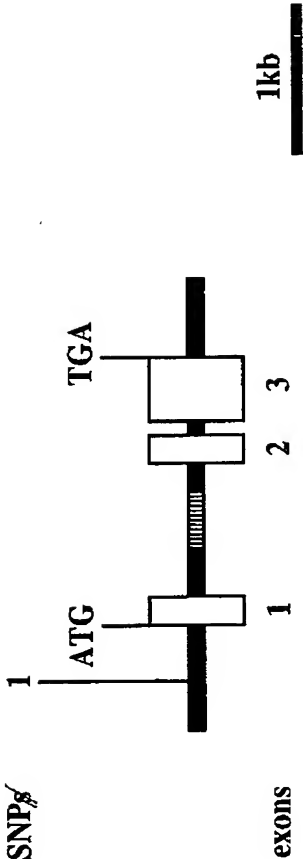
ACCESSION AC019290



【図 1 5】

*Phenylethanolamine N-methyltransferase ( PNMT )*

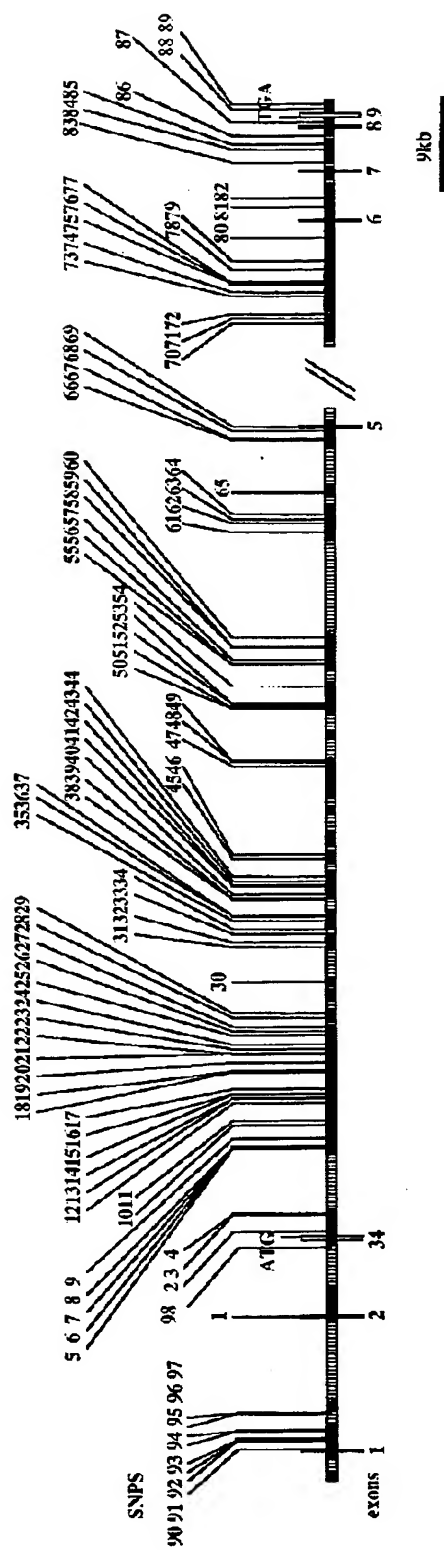
ACCESSION AC040933



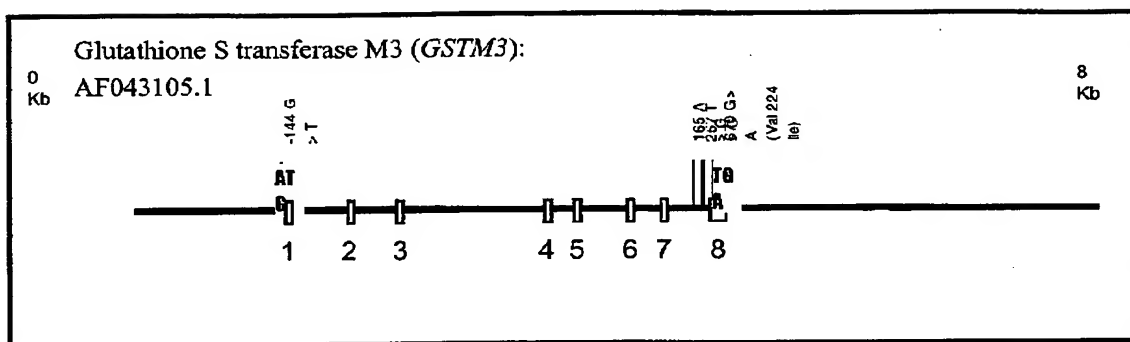
【図 16】

*Phosphatidylethanolamine N-methyltransferase (PEMT)*

ACCESSION AC020558



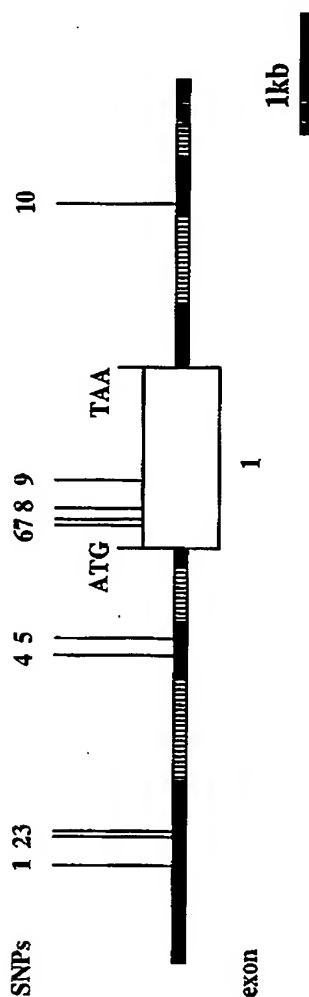
【図 17】



【図 18】

*Aldehyde dehydrogenase 5 (ALDH5)*

ACCESSION AL135785

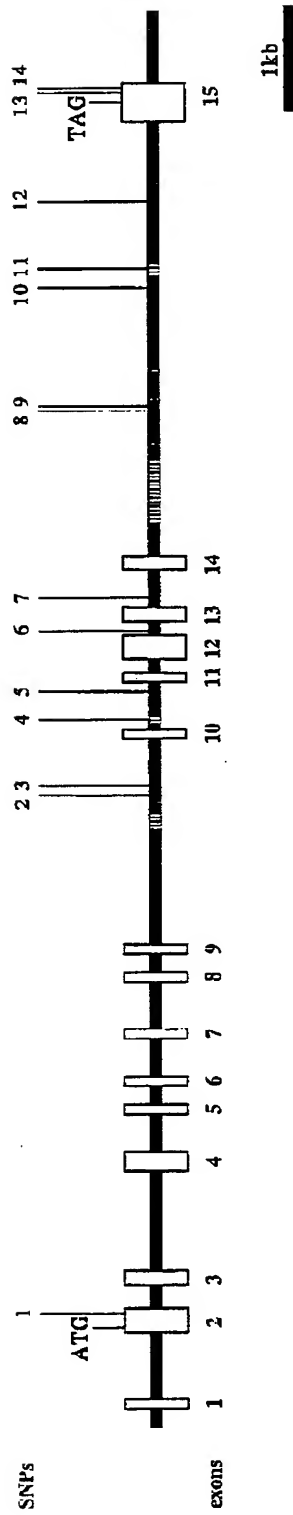




【図 19】

*Transglutaminase 1 (TGM1)*

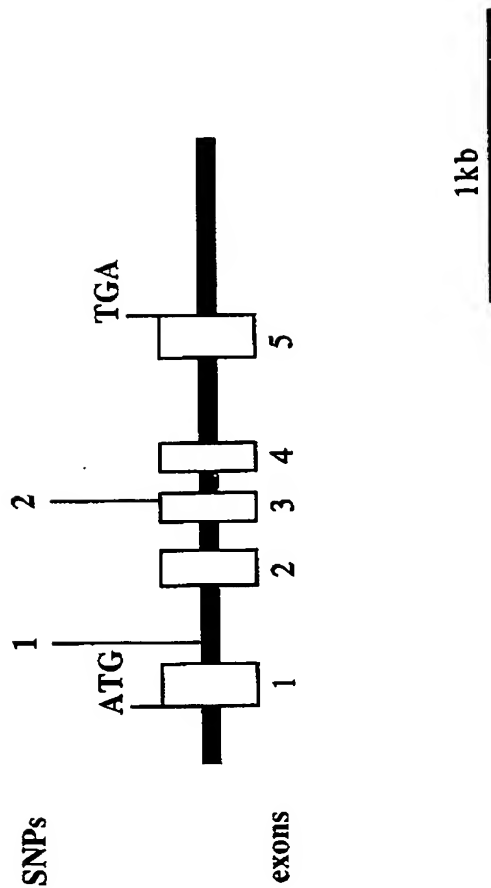
ACCESSION M98447



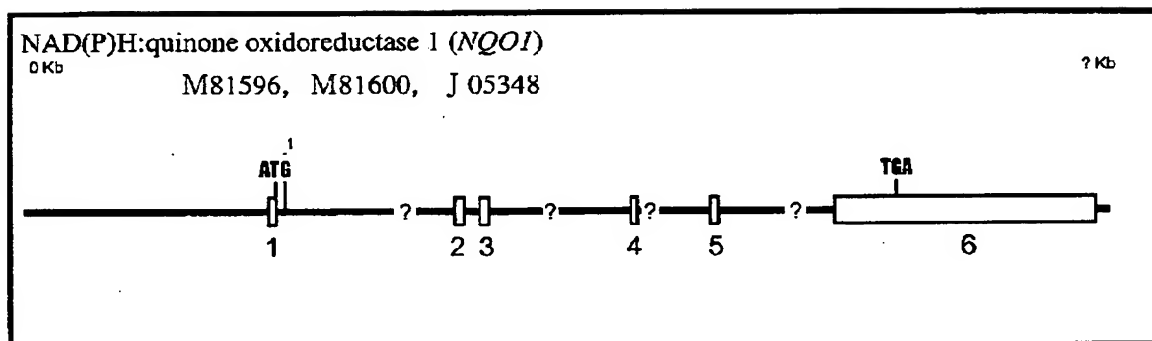
【図 20】

*Gamma-glutamyltransferase 1 (GGT1)*

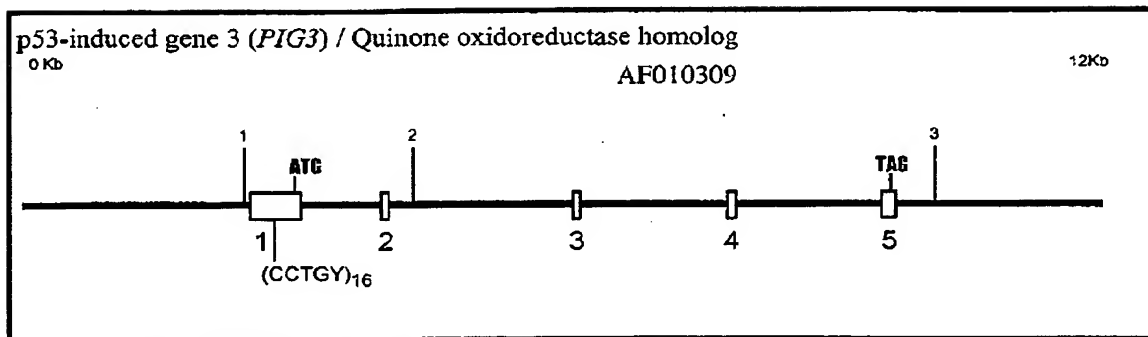
ACCESSION D87002



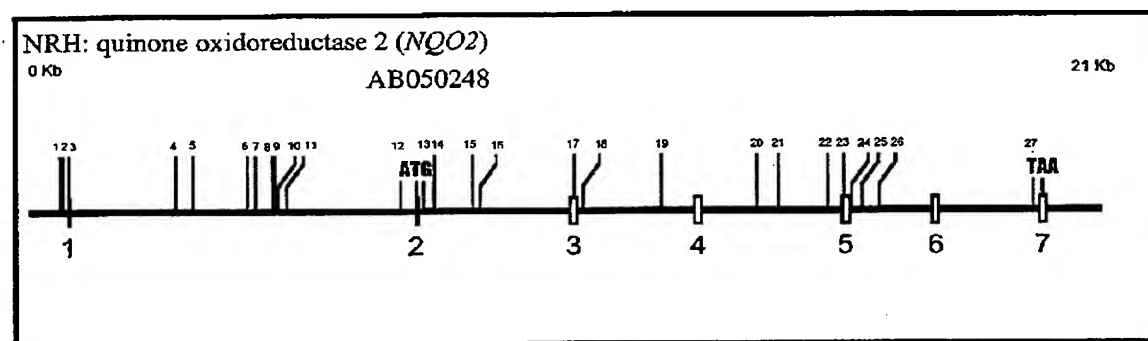
【図 21】



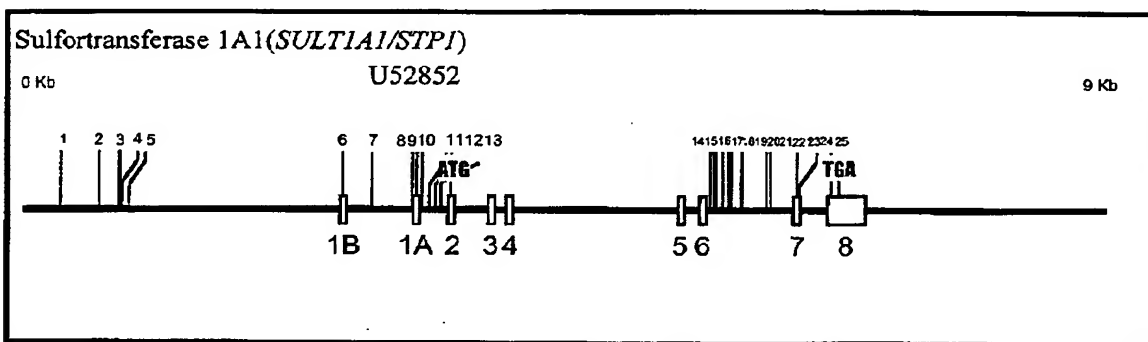
【図 2 2】



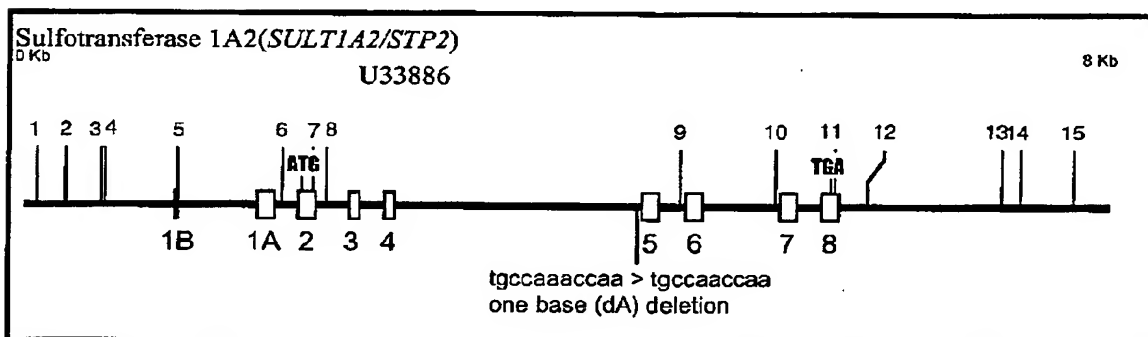
【図 2 3】



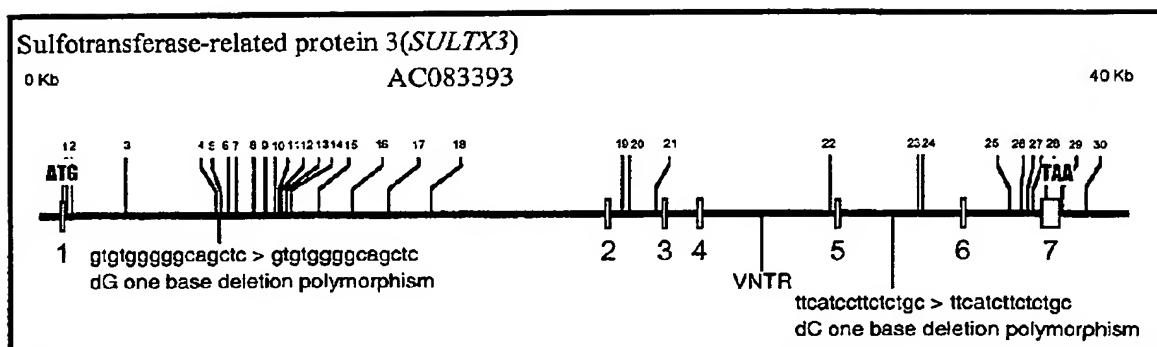
【図 2 4】



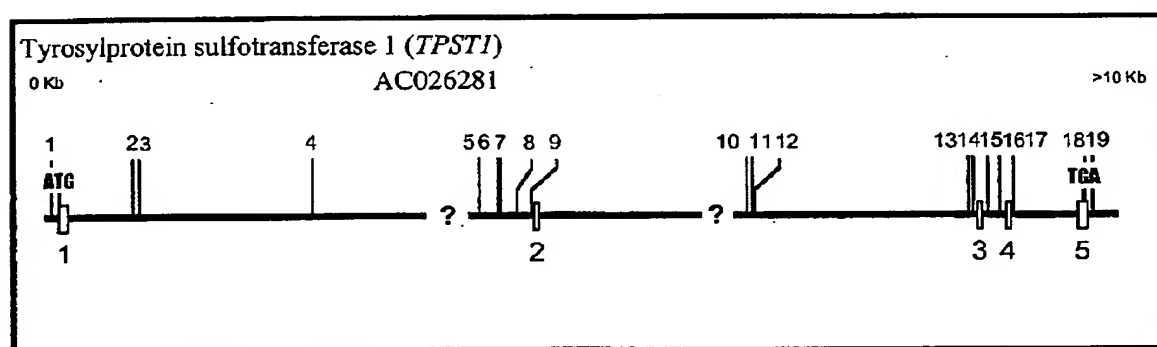
【図 2 5】



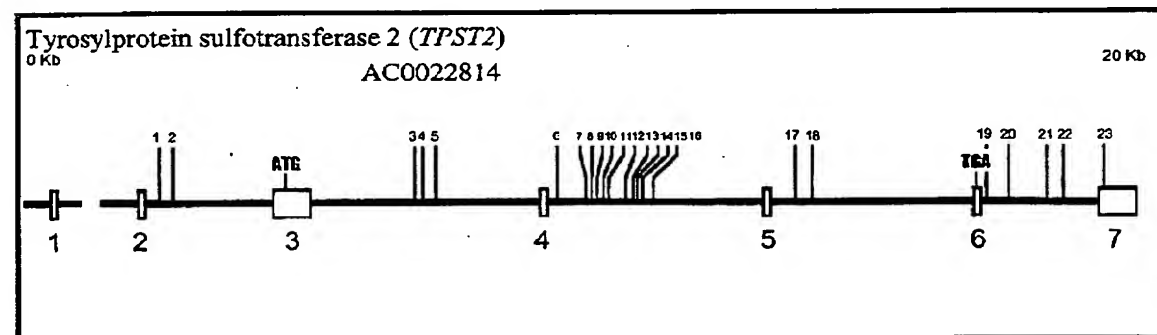
【図 26】



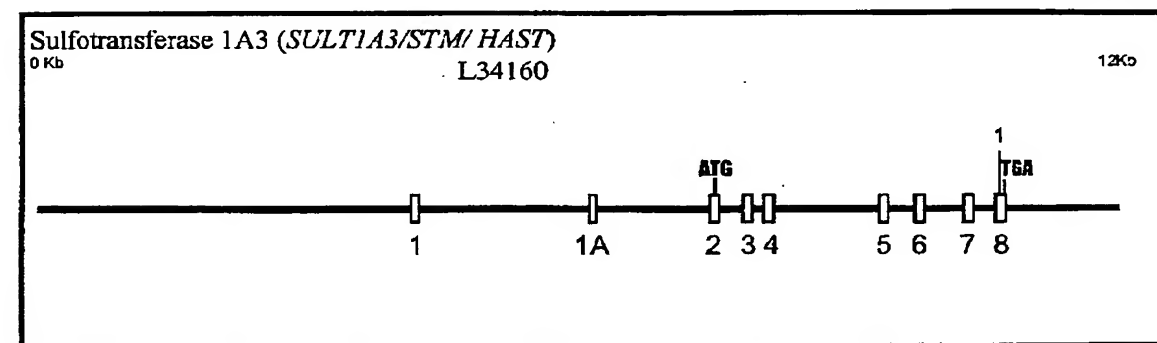
【図 27】



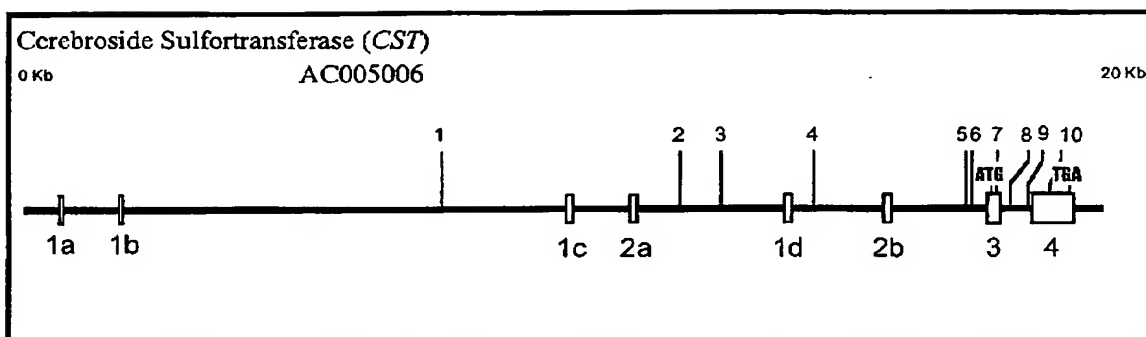
【図 28】



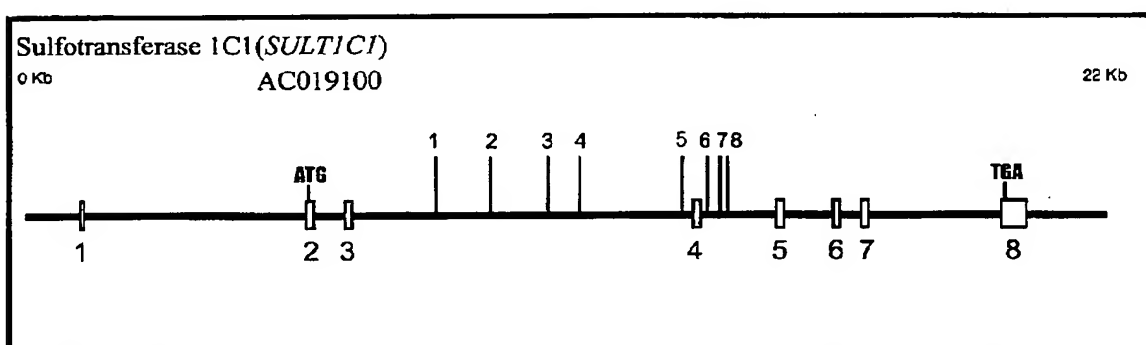
【図 29】



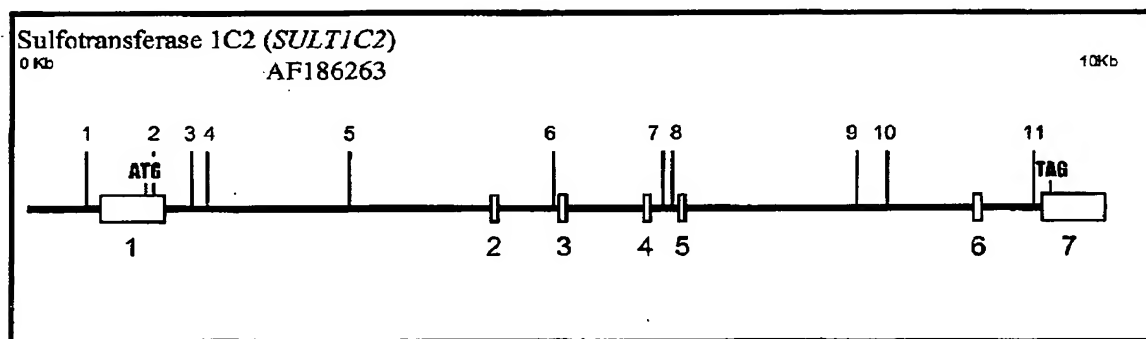
【図 30】



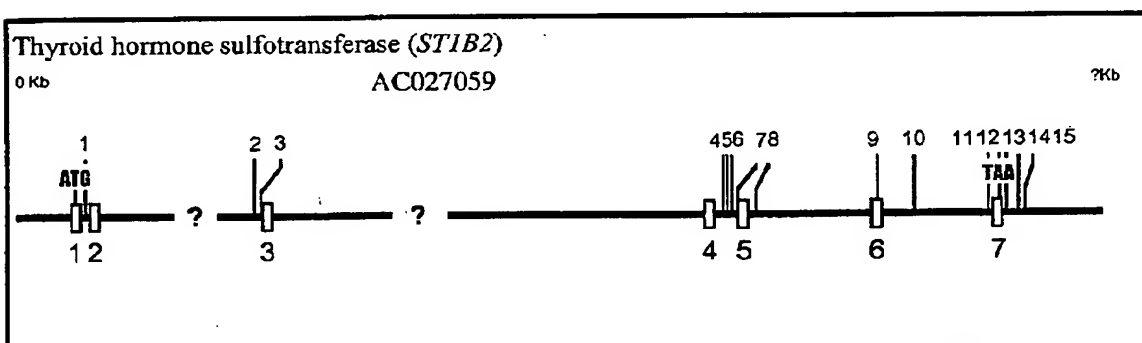
【図 31】



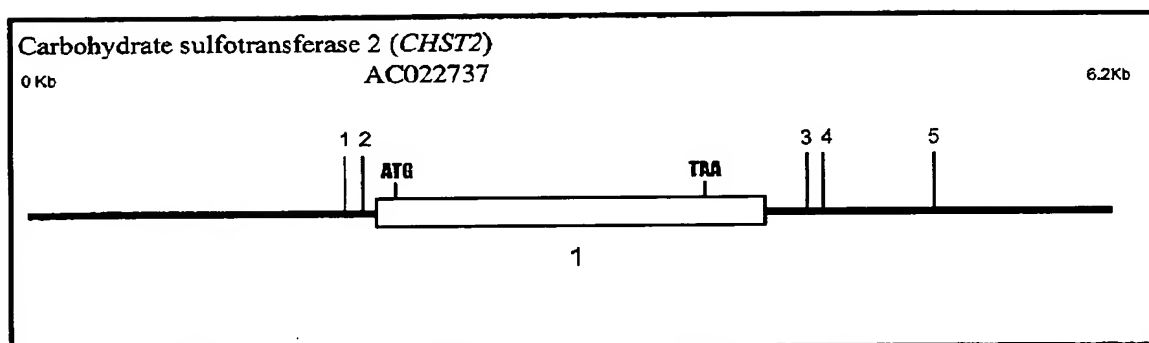
【図 32】



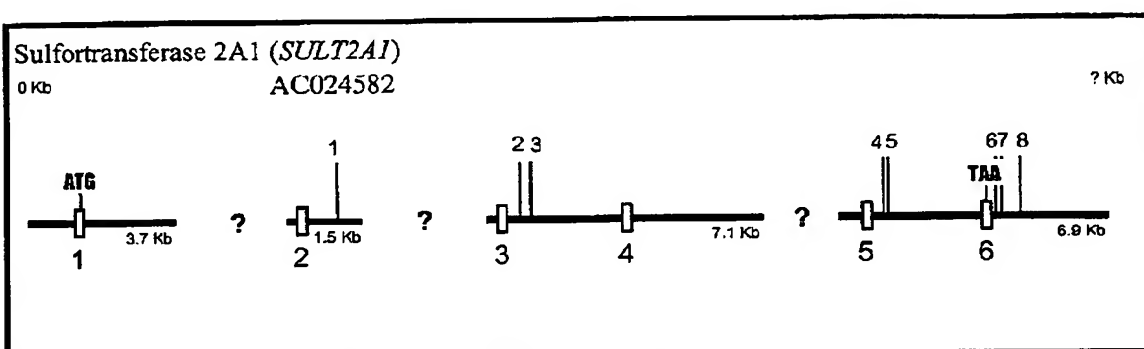
【図 33】



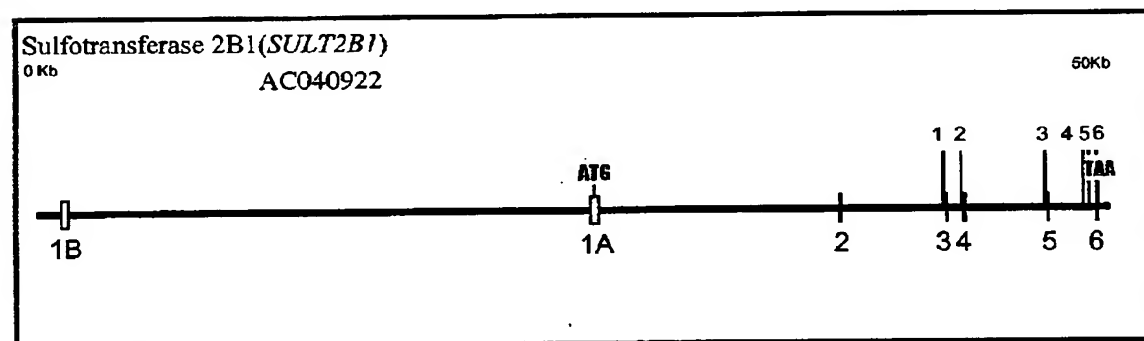
【図 3 4】



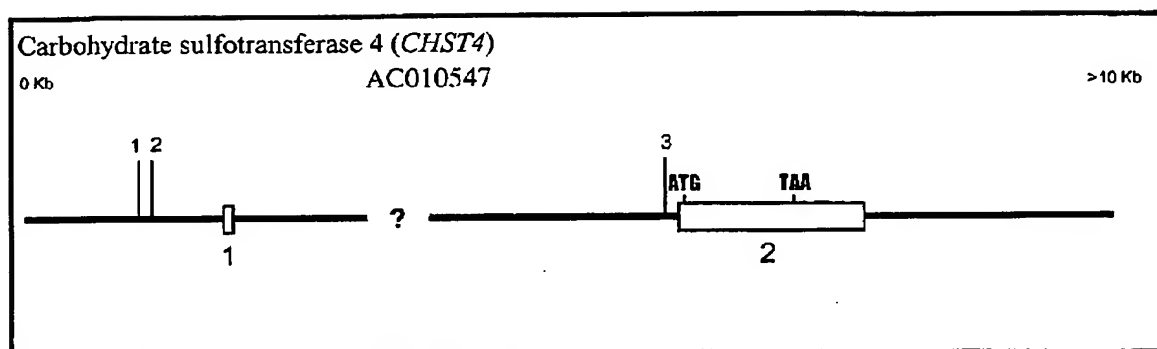
【図 3 5】



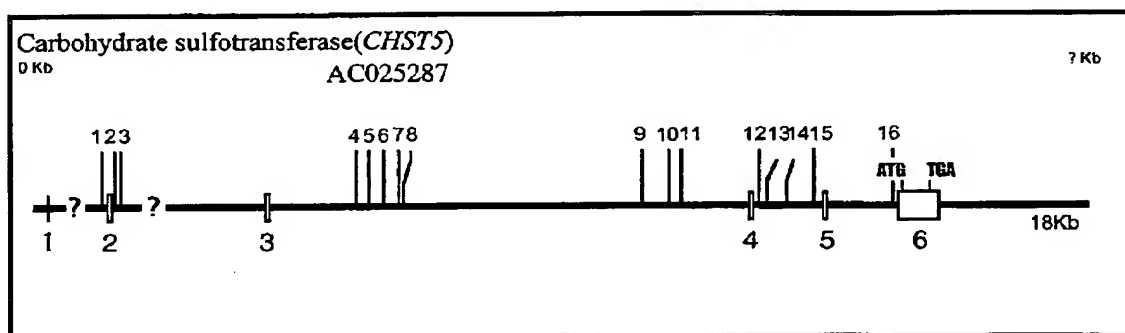
【図 3 6】



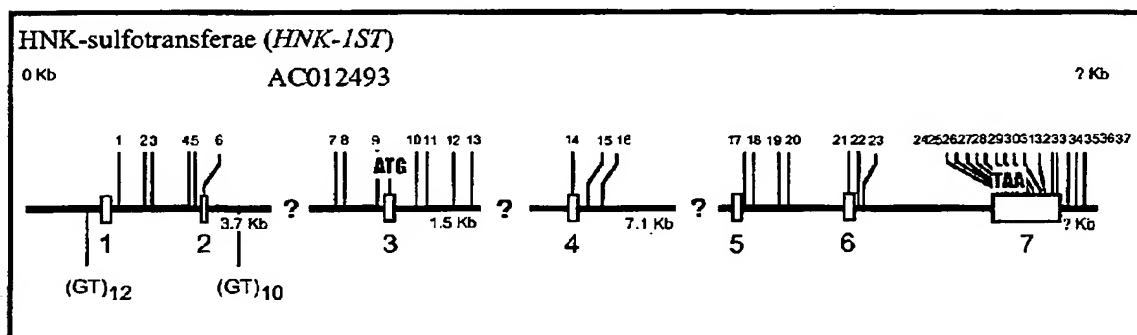
【図 3 7】



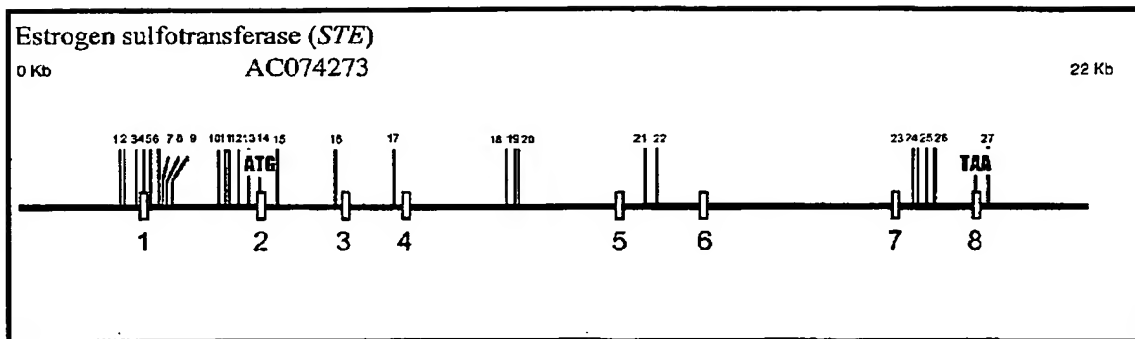
【図 3 8】



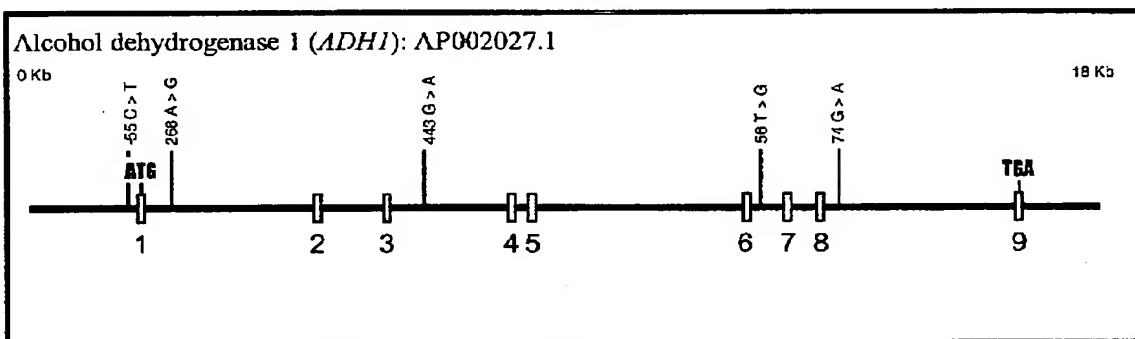
【図 3 9】



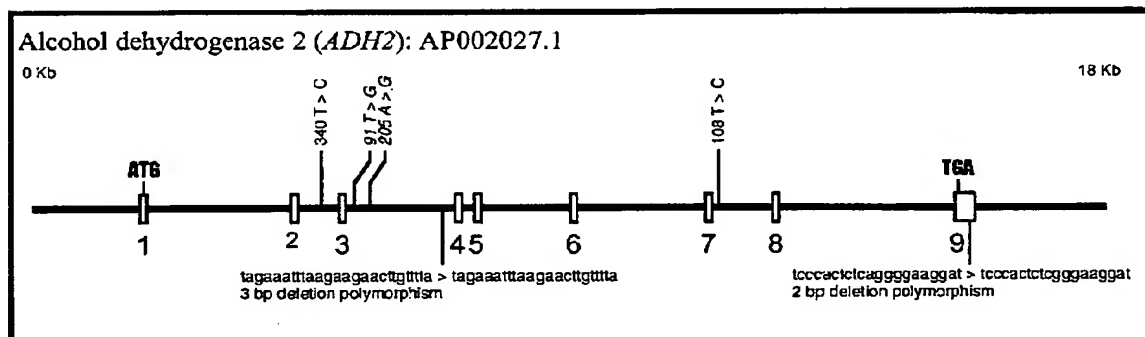
【図 4 0】



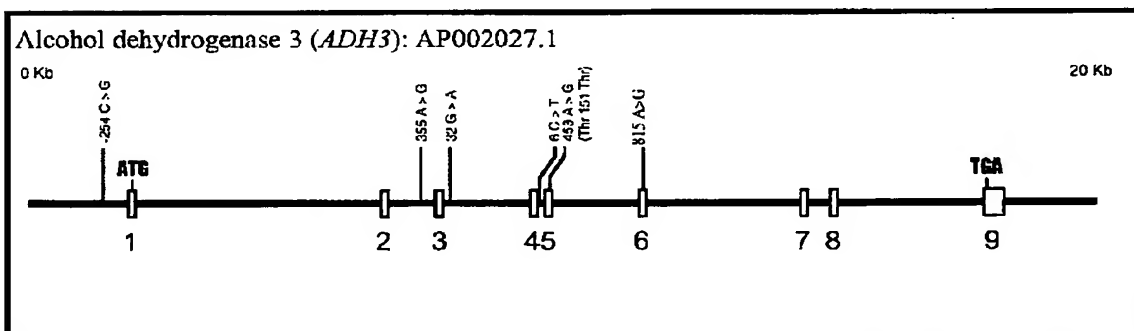
【図 4 1】



【図 4 2】

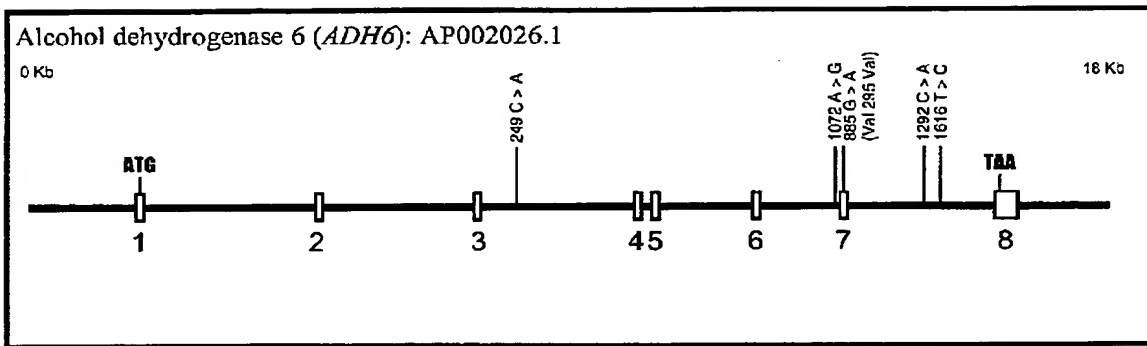


【図 4 3】

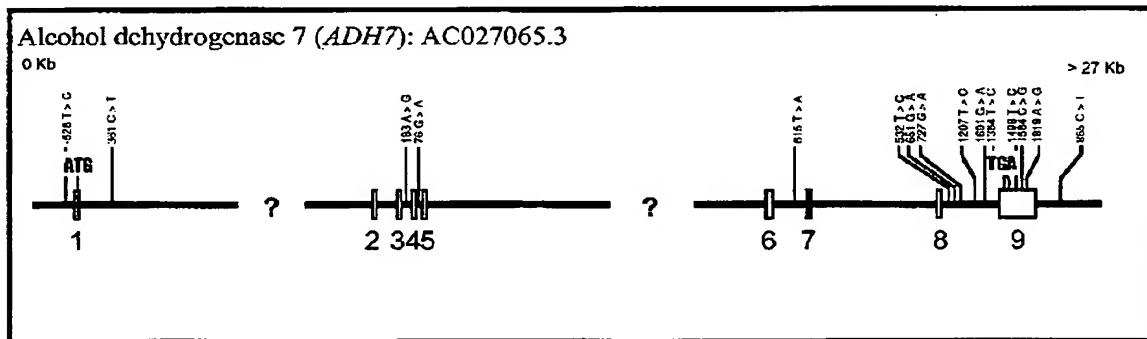




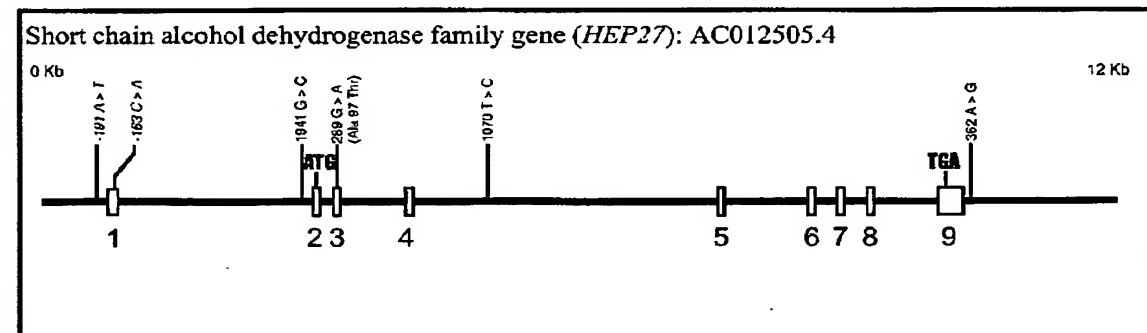
【図 4 4】



【図 4 5】



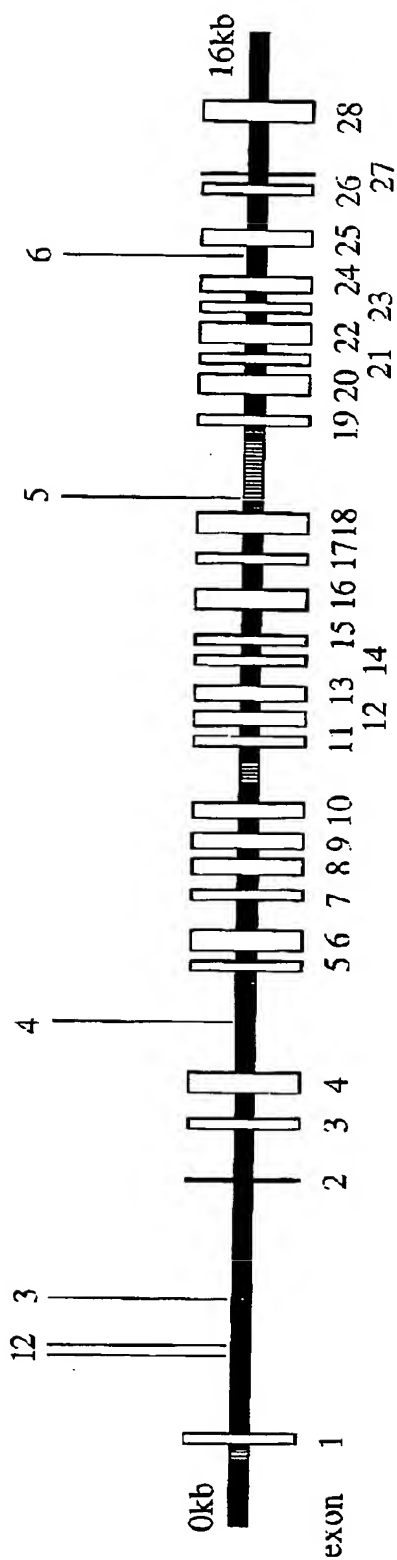
【図 4 6】



【図 47】

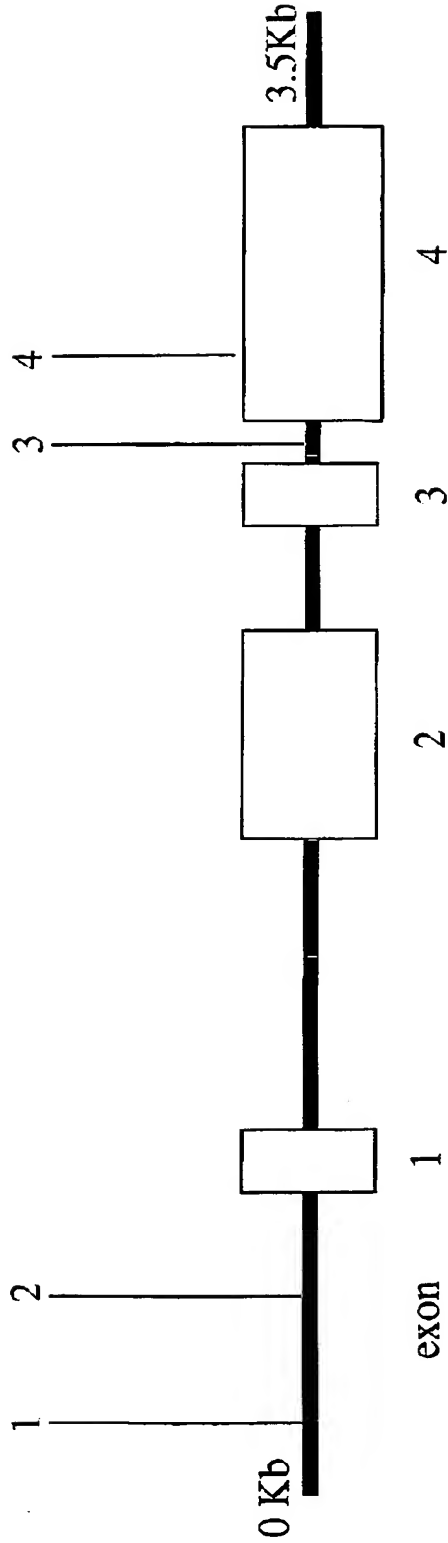
*L1 cell adhesion molecule (L1CAM)*

Accession No. U52112



【図 4 8】

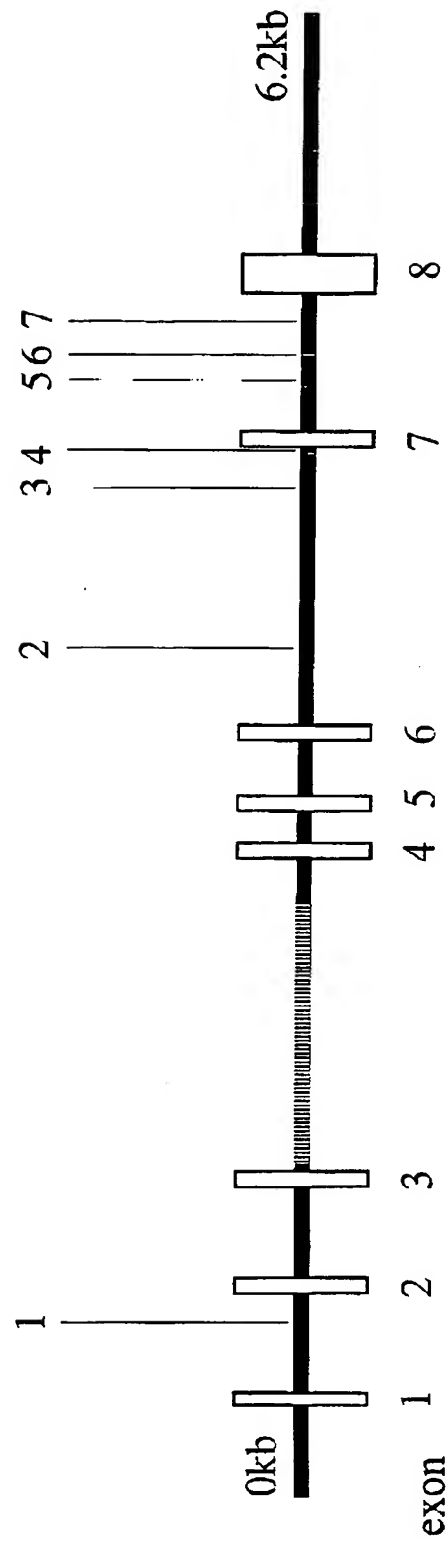
arylalkylamine N-acetyltransferase(AANAT)  
Accession No. U40391



【図 49】

*N*-acetyltransferase, homolog of *S. cerevisiae* (*ARD1*)

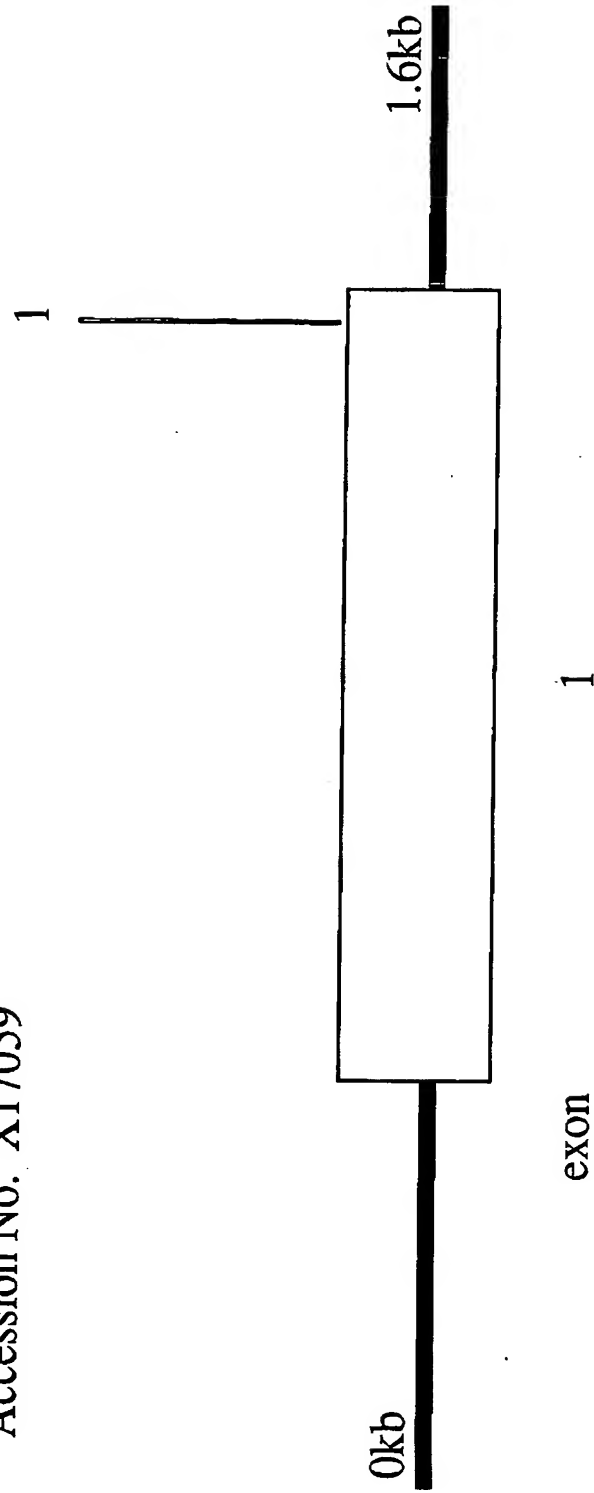
Accession No. U52112



【図 5 0】

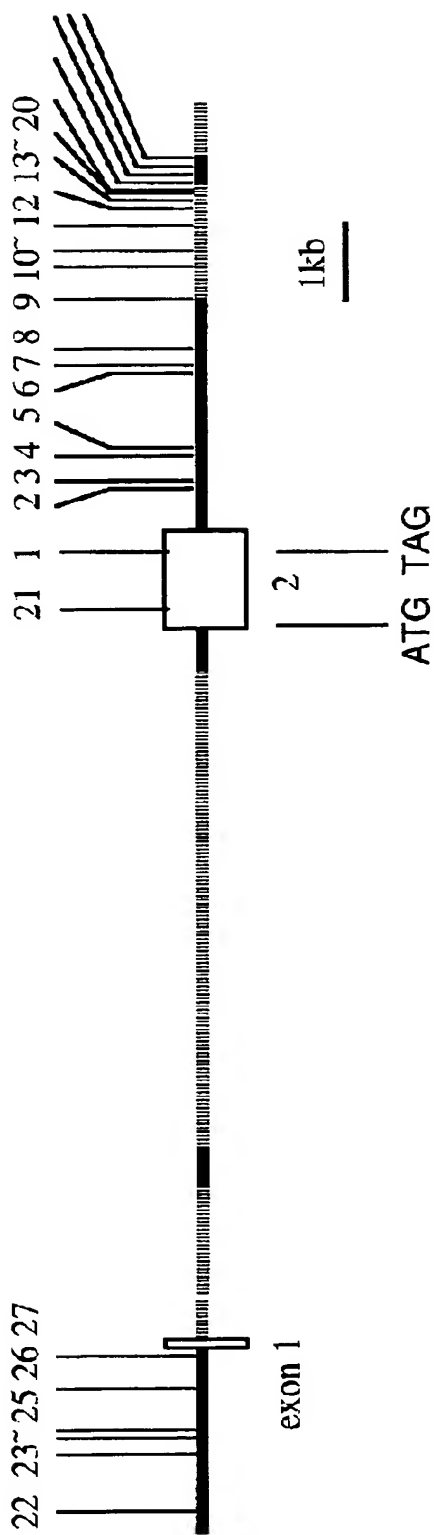
*N*-acetyltransferase (NAT1)

Accession No. X17059



【図 51】

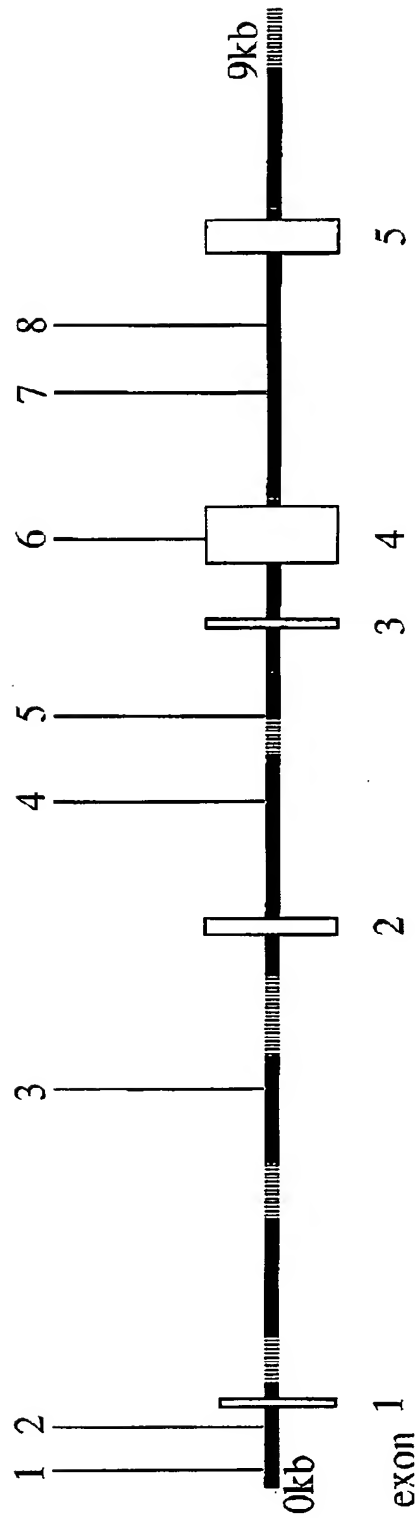
*arylamine N-acetyltransferase (NAT2)* Accession No.: I22255, AC025062, AC025648, D10870



【図 52】

Granzyme A(GZMA)

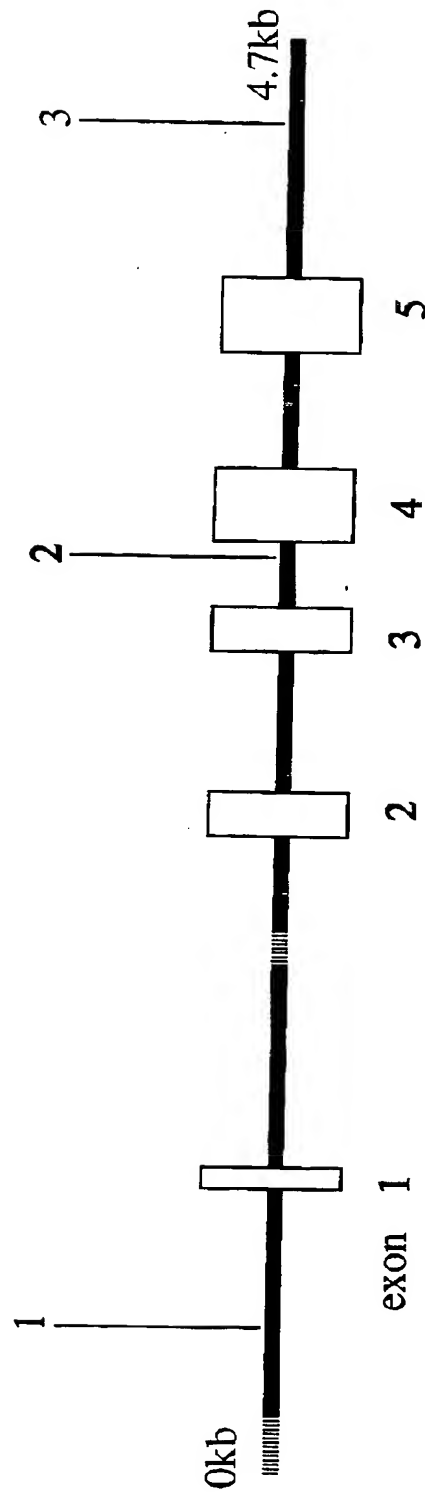
Accession No. AC025790



【図 53】

*Granzyme B (GZMB)*

Accession No. M72150

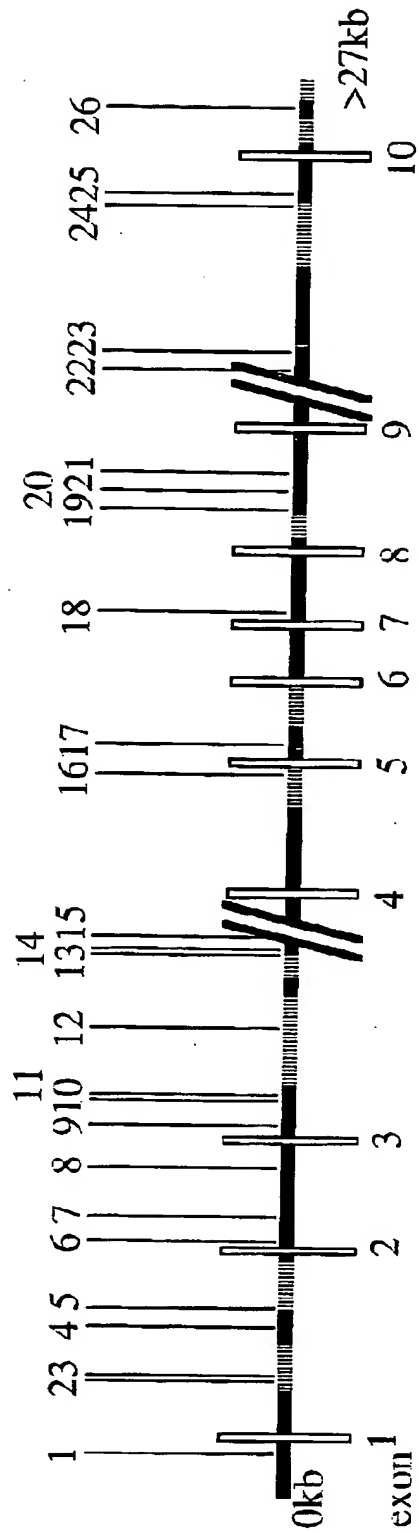




【図 54】

esterase D/formylglutathione hydrolase (ESD)

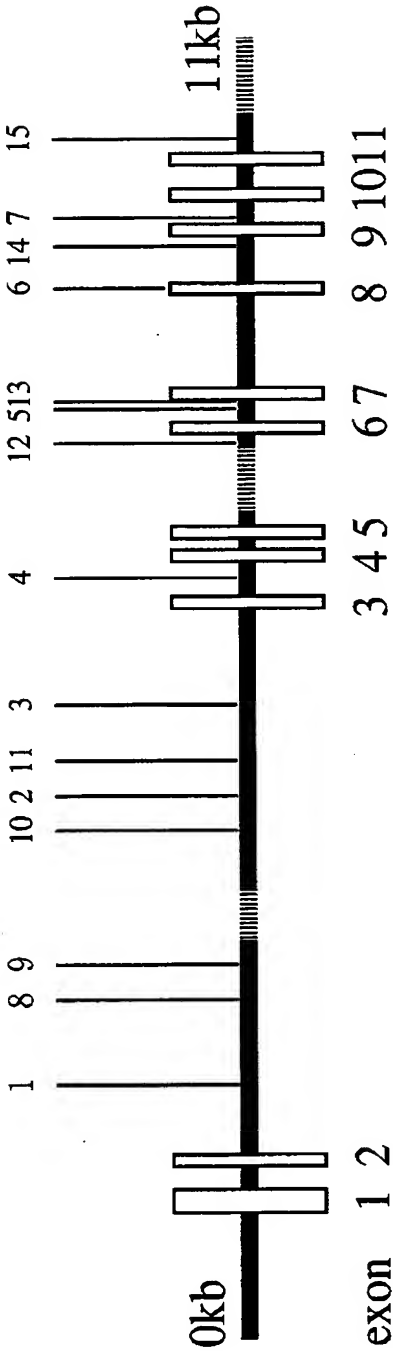
Accession No. AC136958



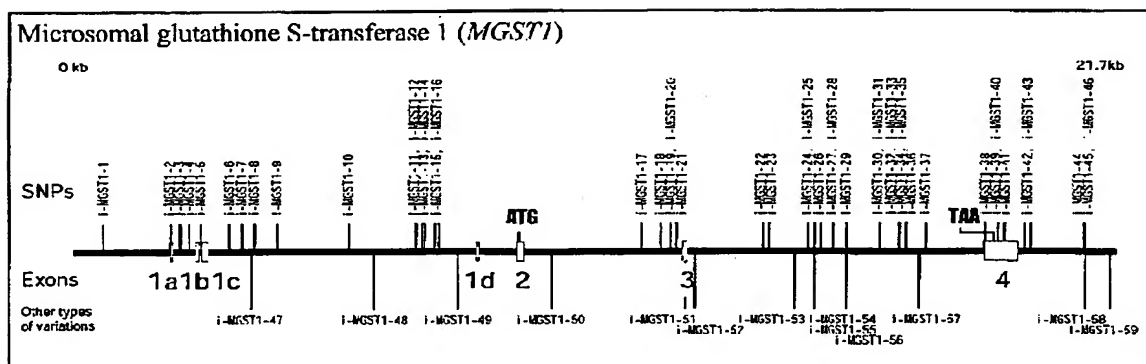
【図 5 5】

*dolichyl-diphosphooligosaccharide-protein glycosyltransferase (DDOST)*

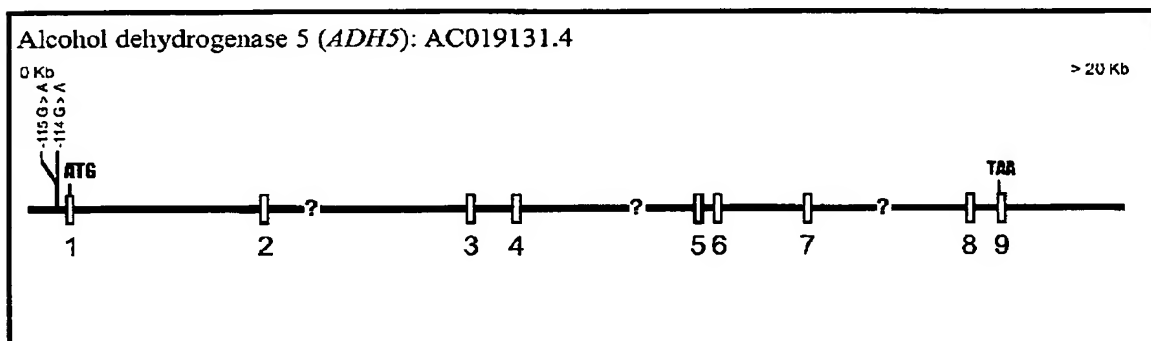
Accession No. D89060



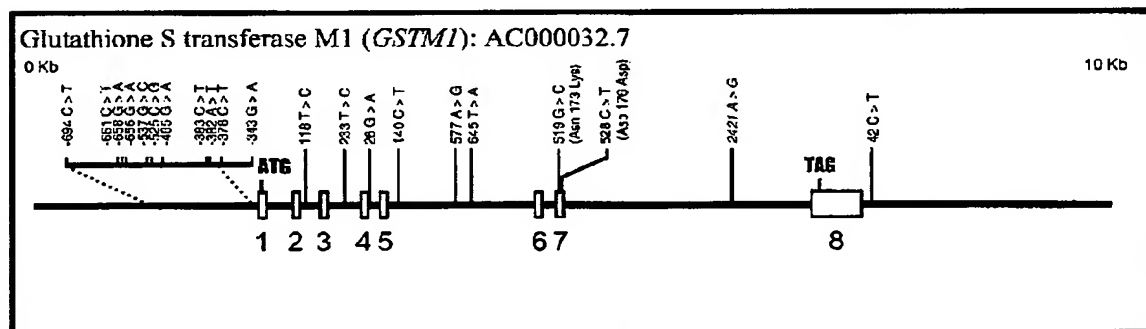
【図 5 6】



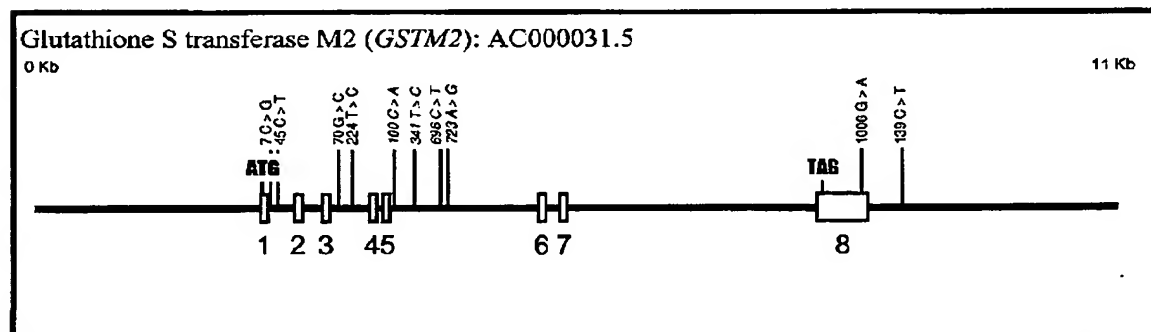
【図 5 7】



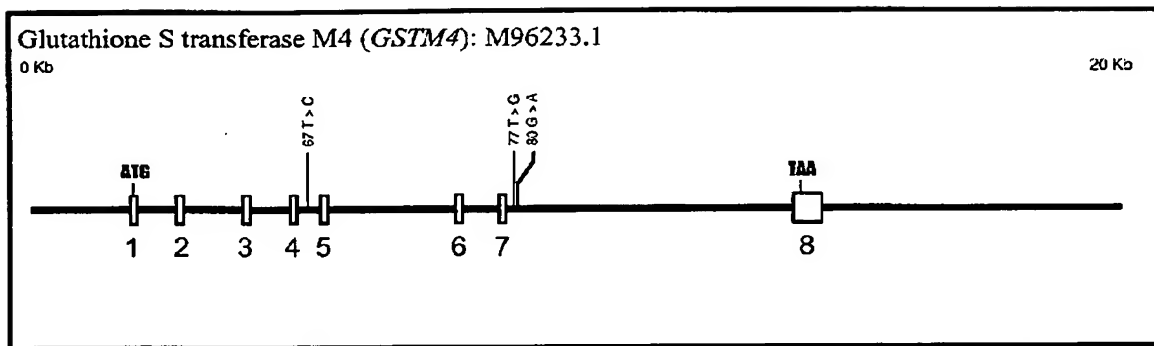
【図 5 8】



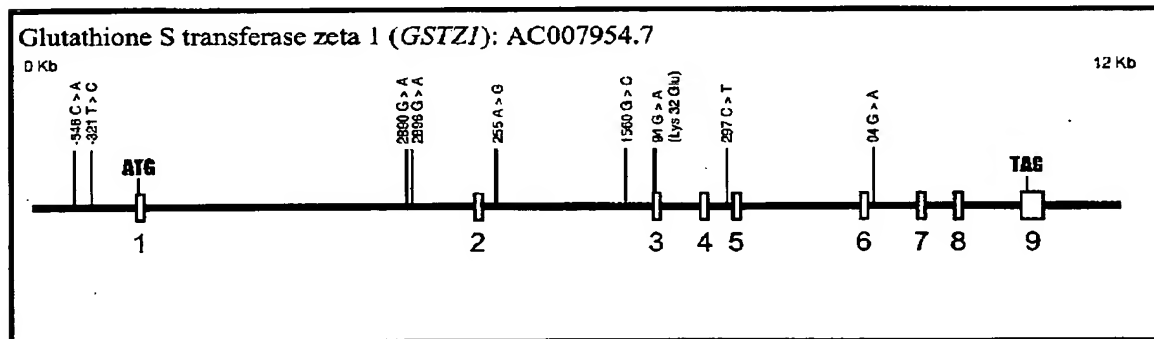
【図 5 9】



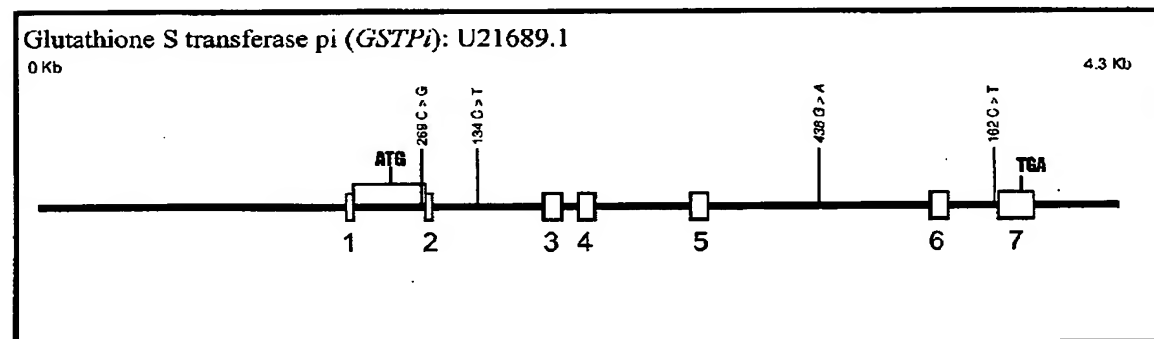
【図 6 0】



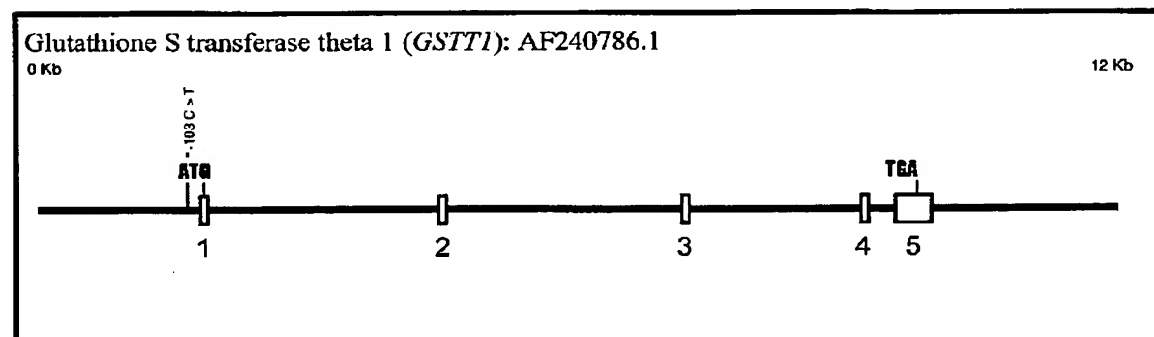
【図 6 1】



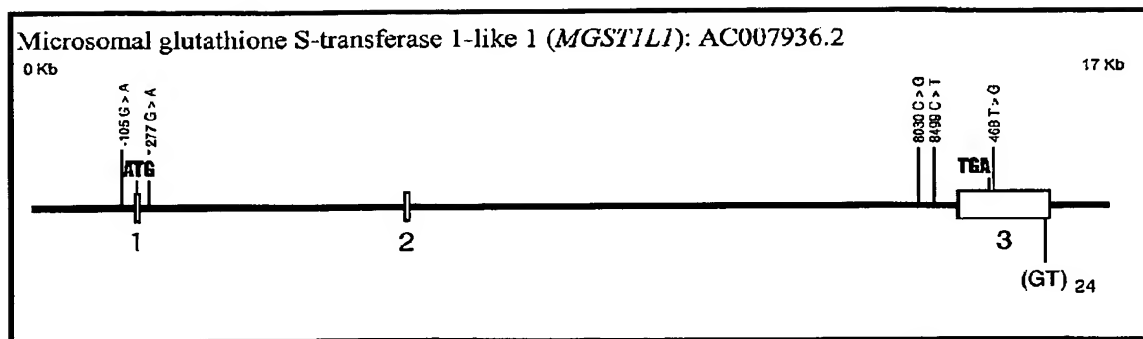
【図 6 2】



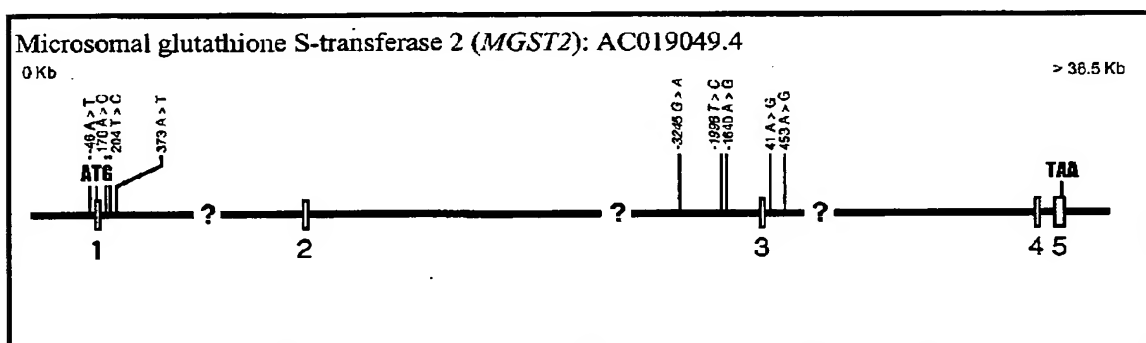
【図 6 3】



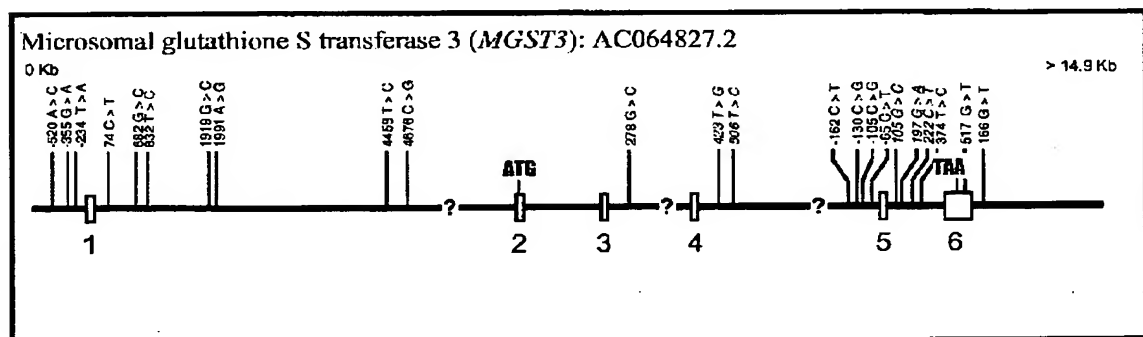
【図 6 4】



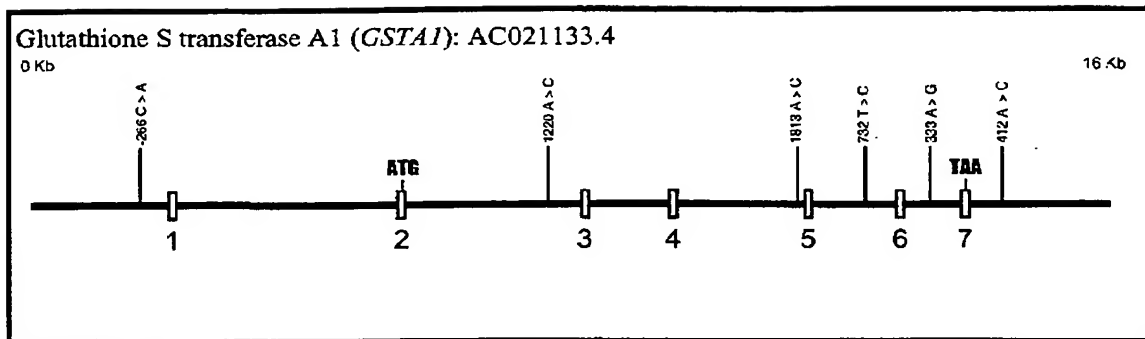
【図 6 5】



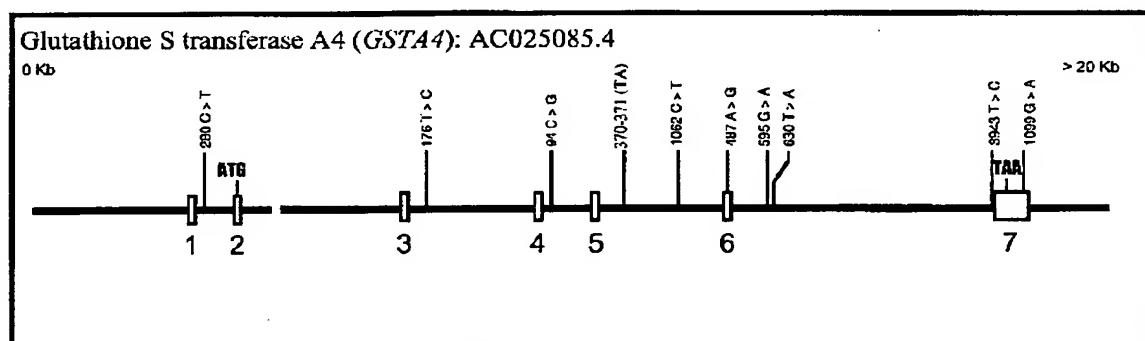
【図 6 6】



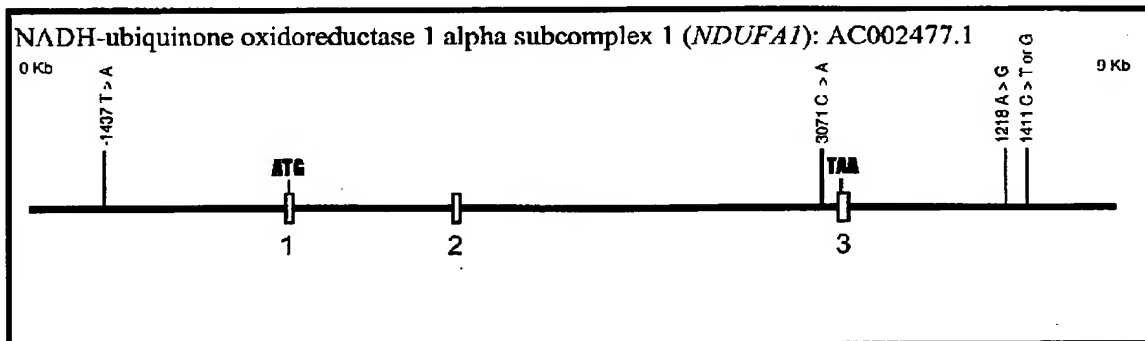
【図 6 7】



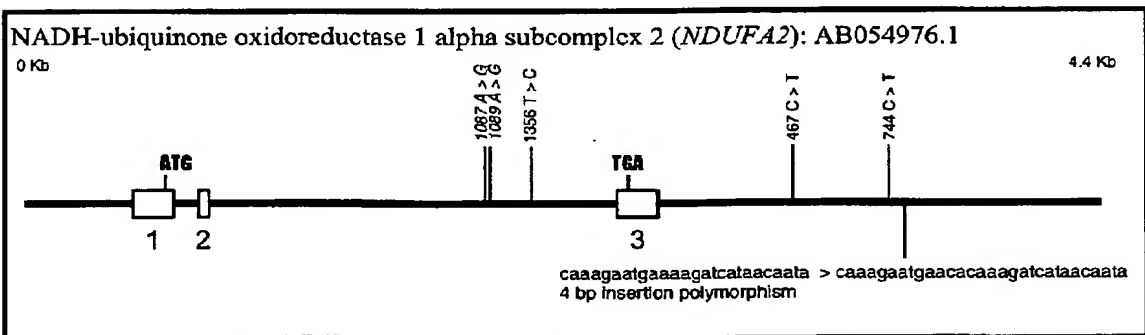
【図 6 8】



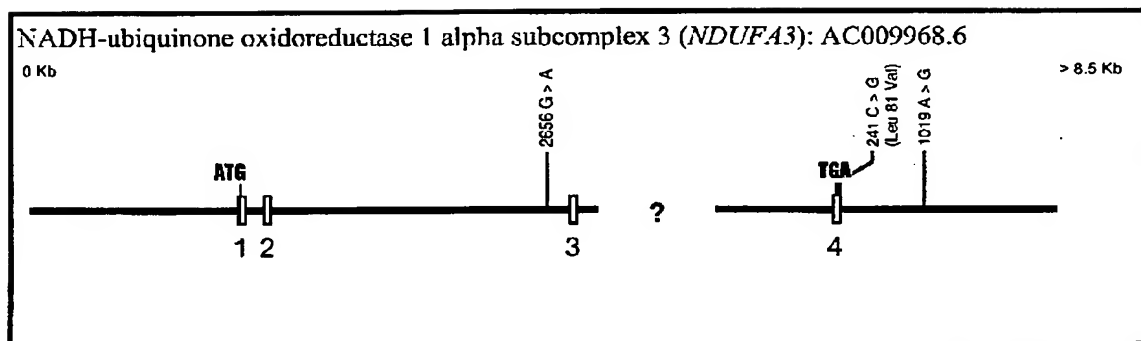
【図 6 9】



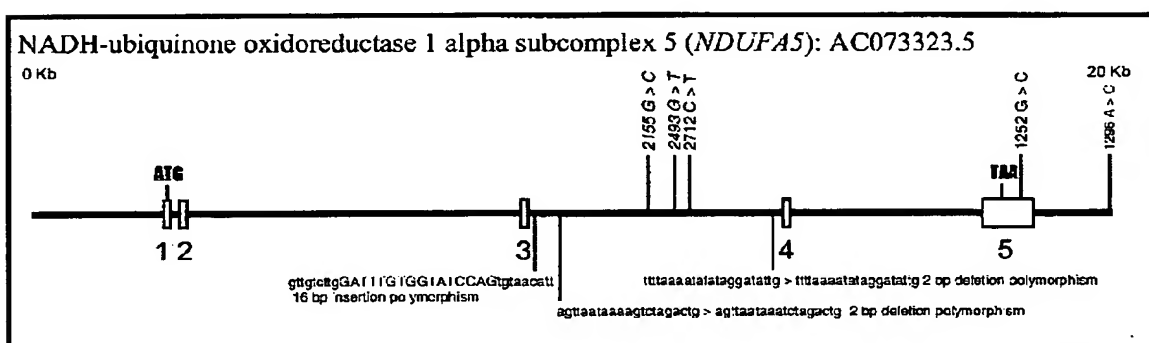
【図 7 0】



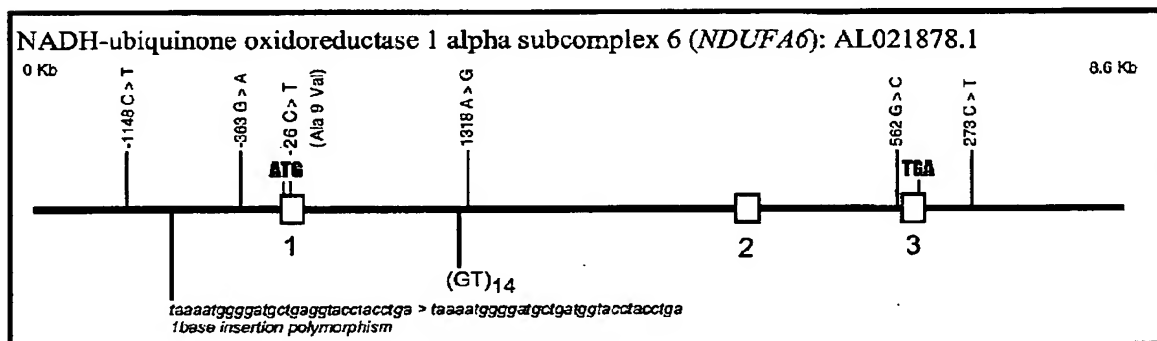
【図 7 1】



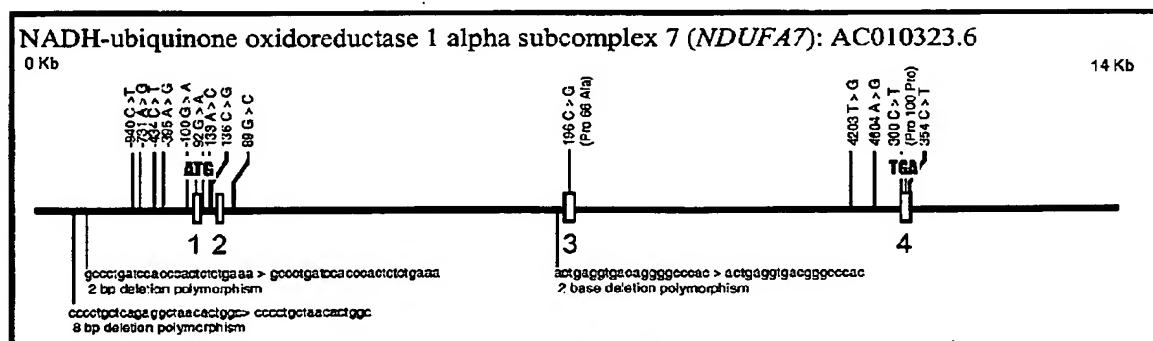
【図 7 2】



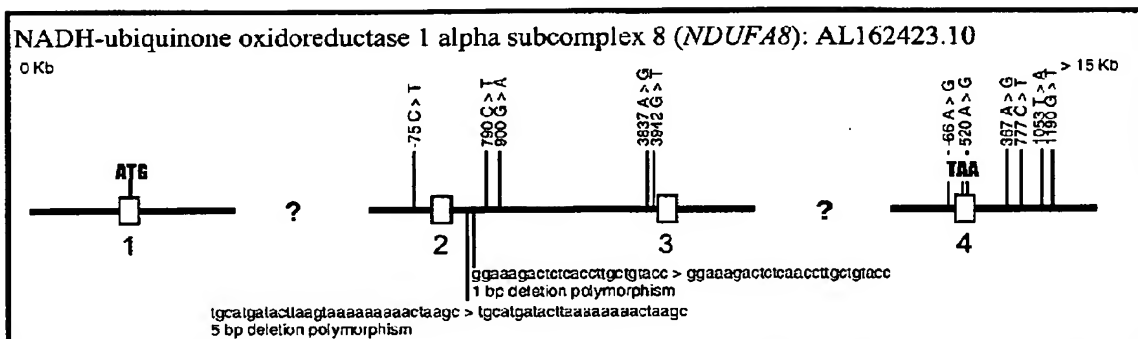
【図 7 3】



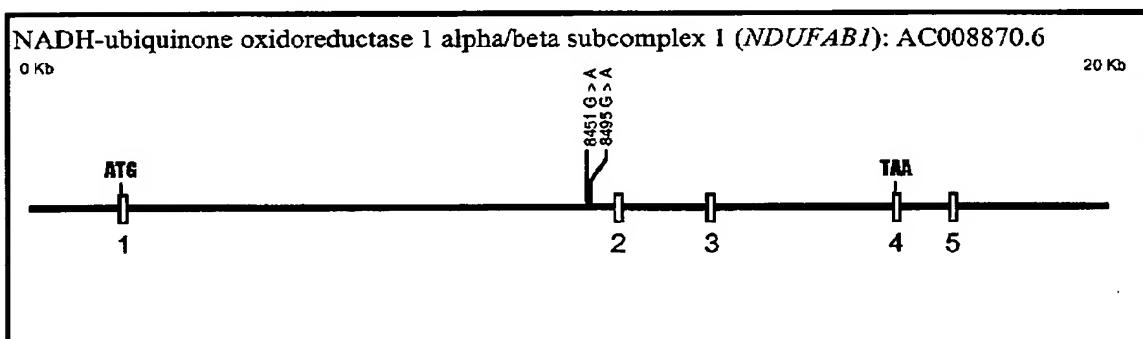
【図 7 4】



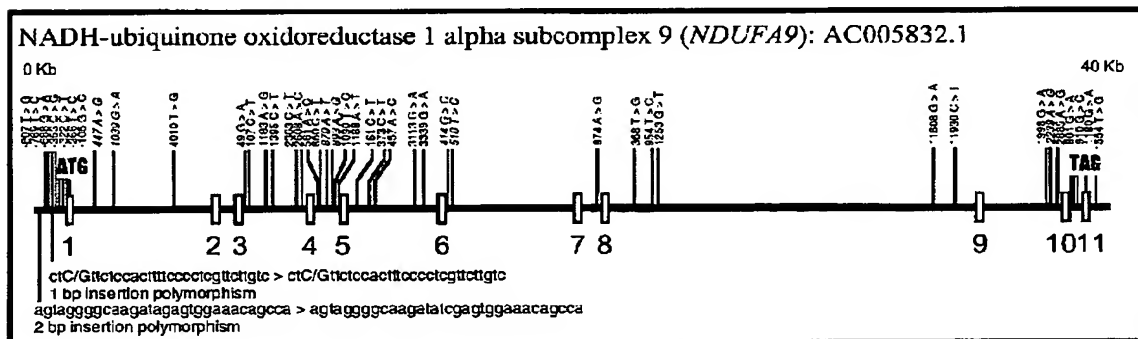
【図 7 5】



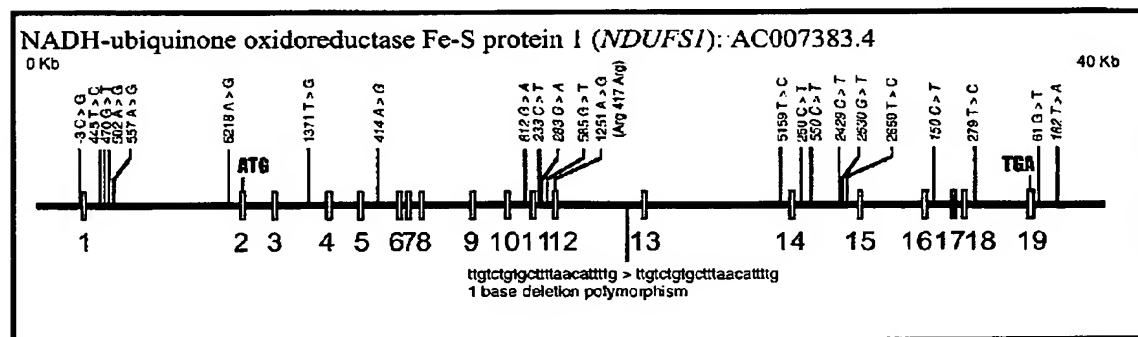
【図 7 6】



【図 7 7】

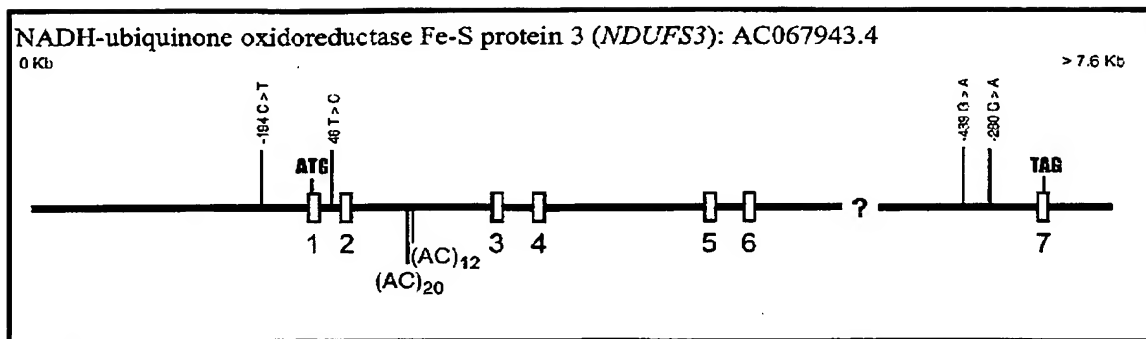


【図 7 8】

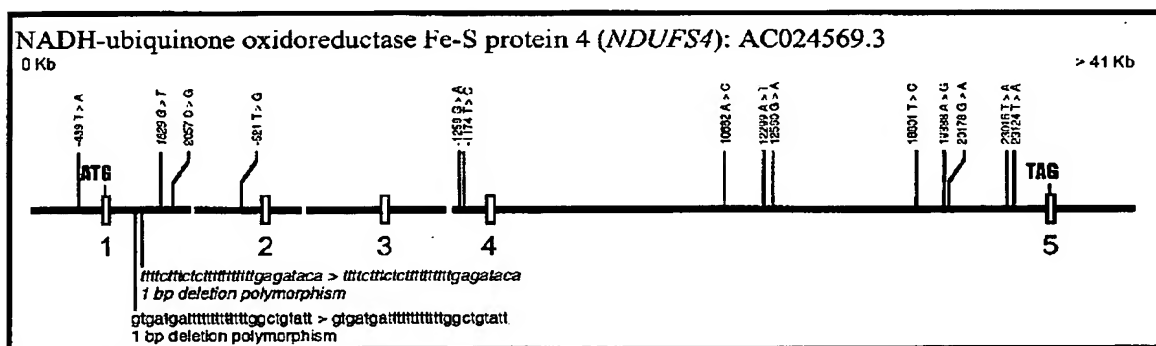




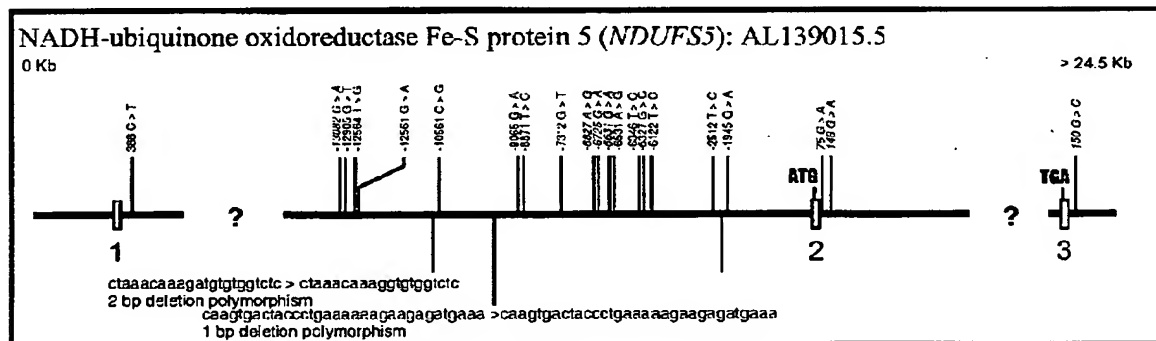
【図 7 9】



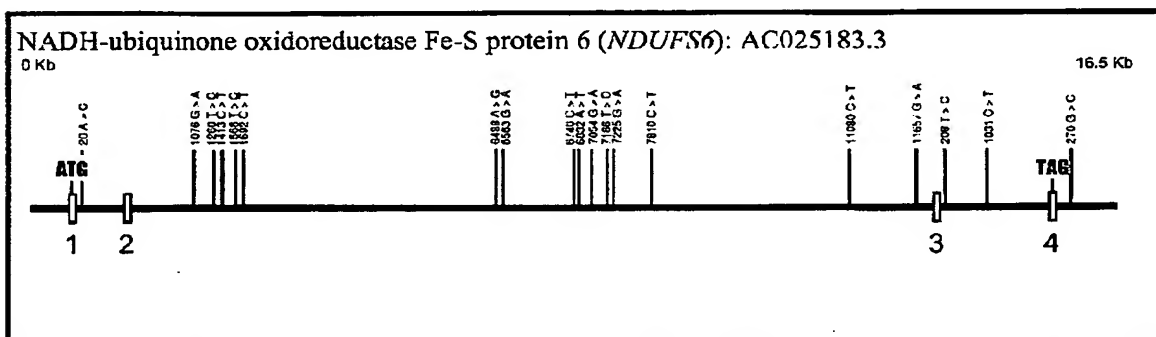
【図 80】



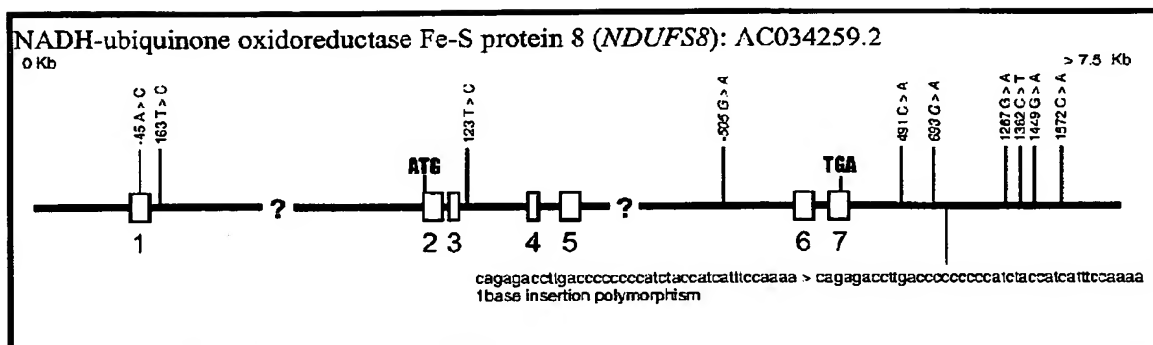
【図 8 1】



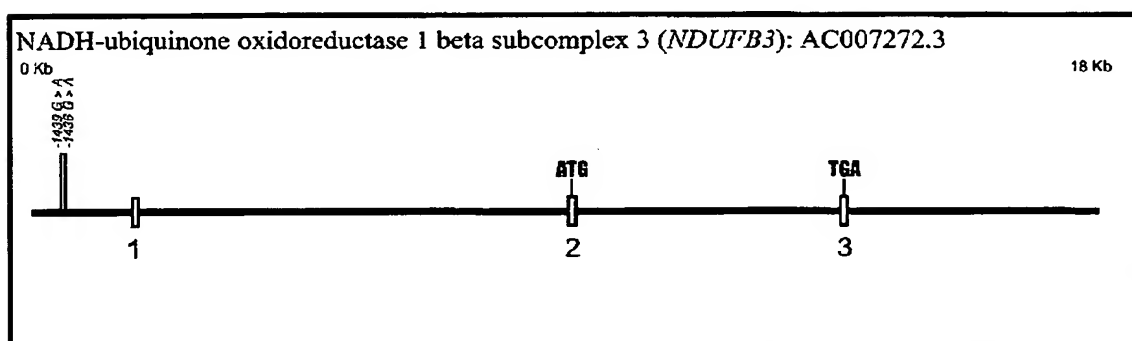
【図 8 2】



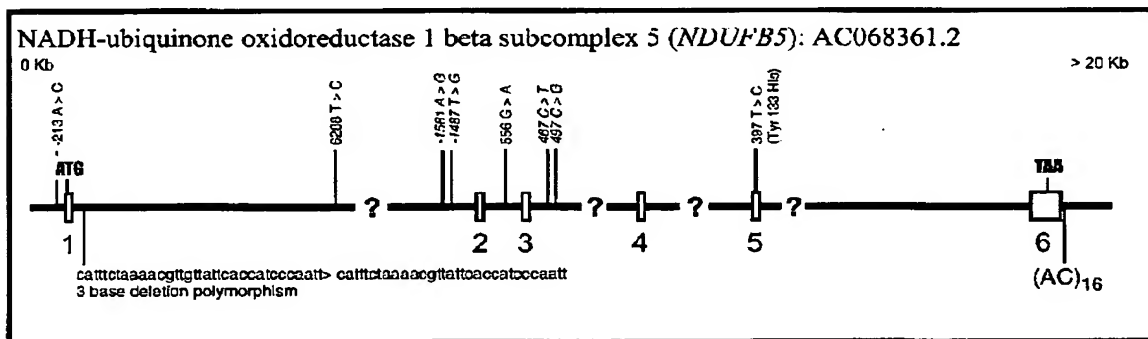
【図 8 3】



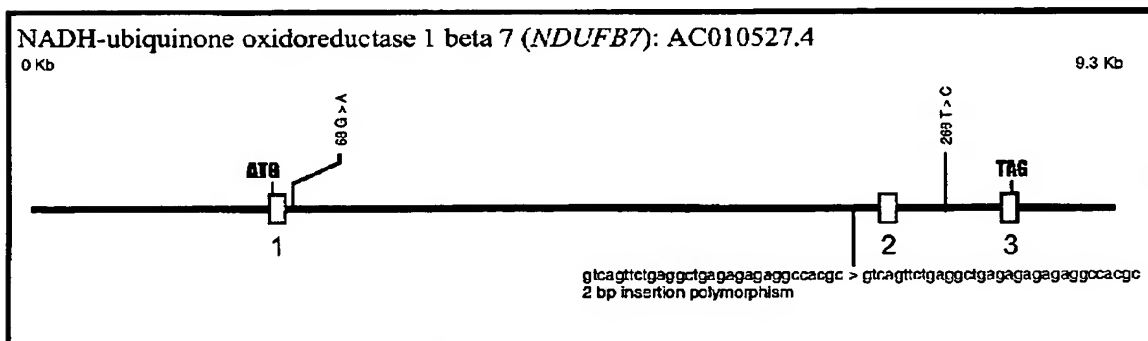
【図 8 4】



【図 8 5】



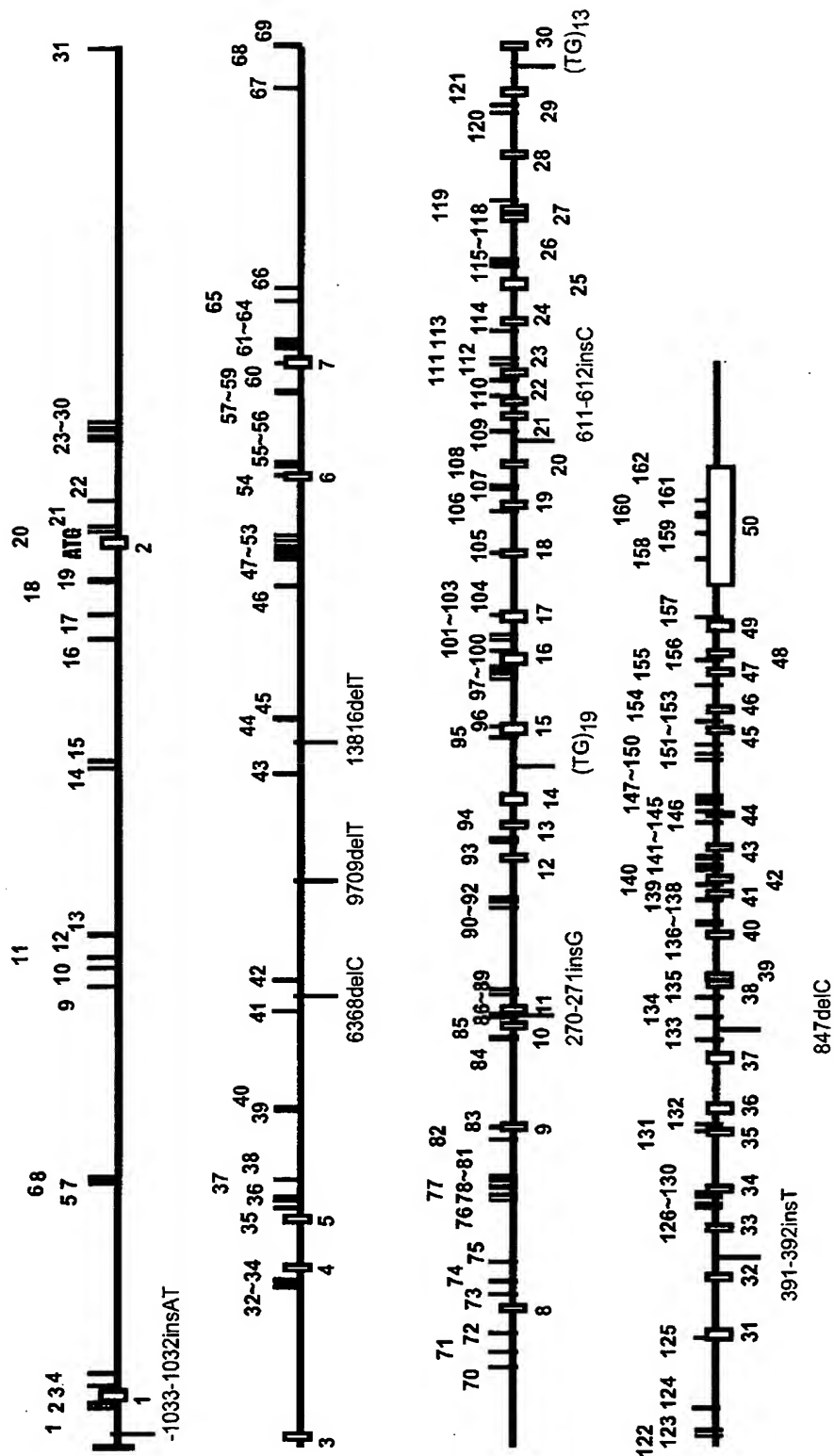
【図 8 6】



【図 8 7】

# SNPs

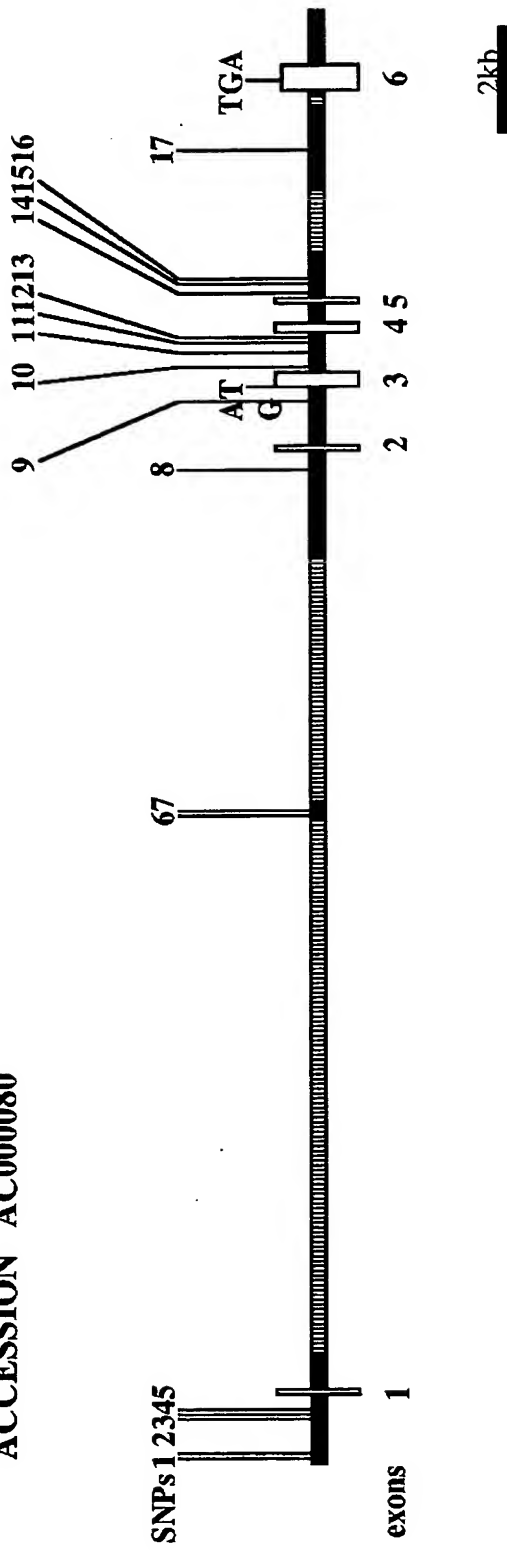
**ABCA1**      **ACCESSION**      **AF275948.1**



【図 88】

*Catechol-O-methyltransferase (COMT)*

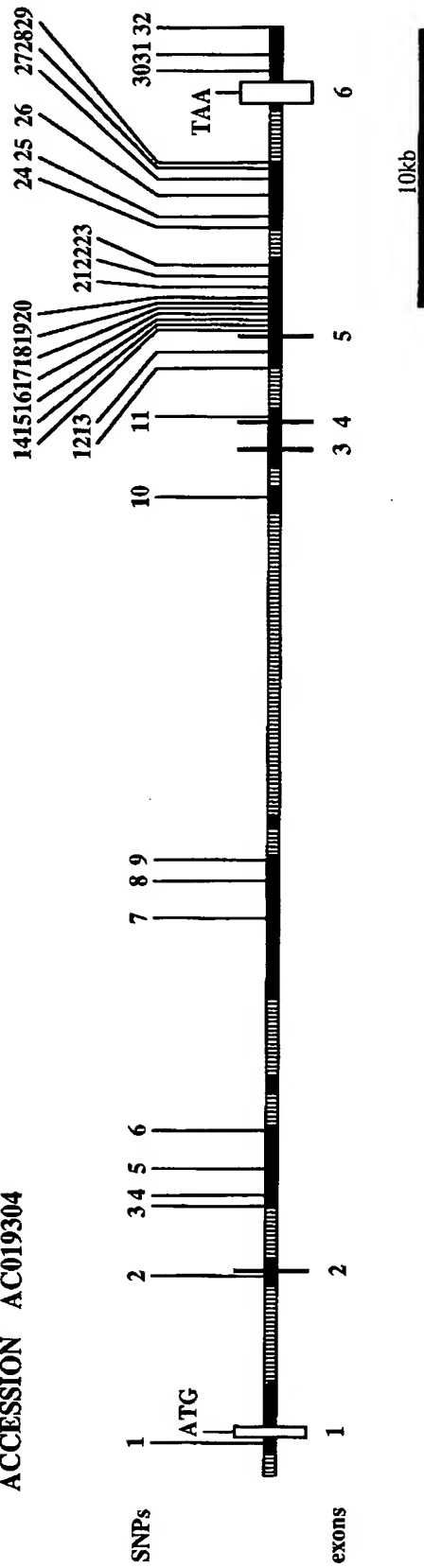
ACCESSION AC000080



【図 89】

*Histamine N-methyltransferase (HNMT)*

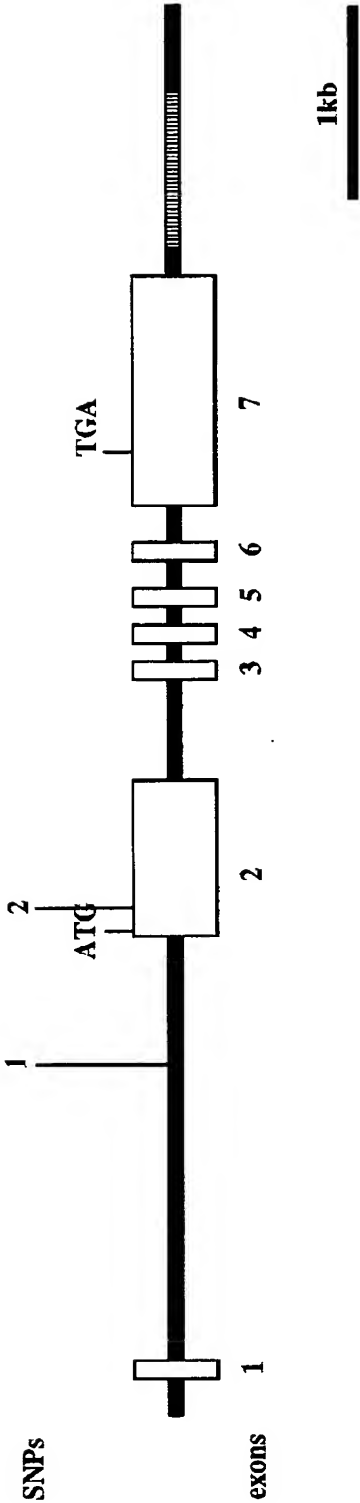
ACCESSION AC019304



【図 9 0】

Cytochrome P450, subfamily I, polypeptide I (CYP1A1)

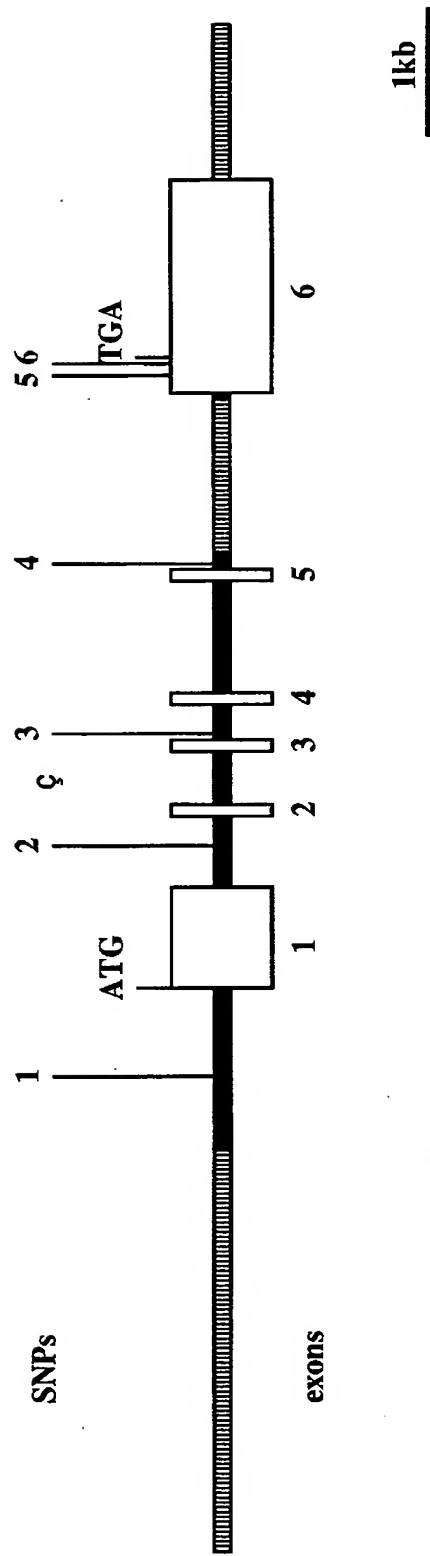
ACCESSION X04300



【図 91】

*Cytochrome P450, subfamily 1, polypeptide 2 (CYP1A2)*

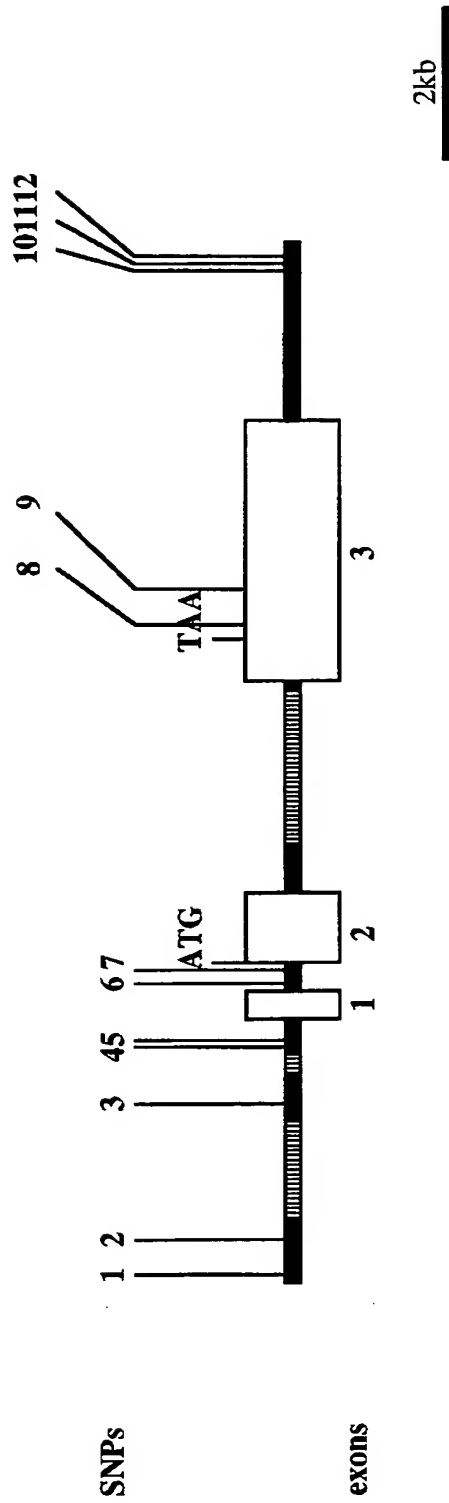
ACCESSION AC020705



【図 9 2】

*Cytochrome P450, subfamily I, polypeptide 1 (CYP1B1)*

ACCESSION AC009229

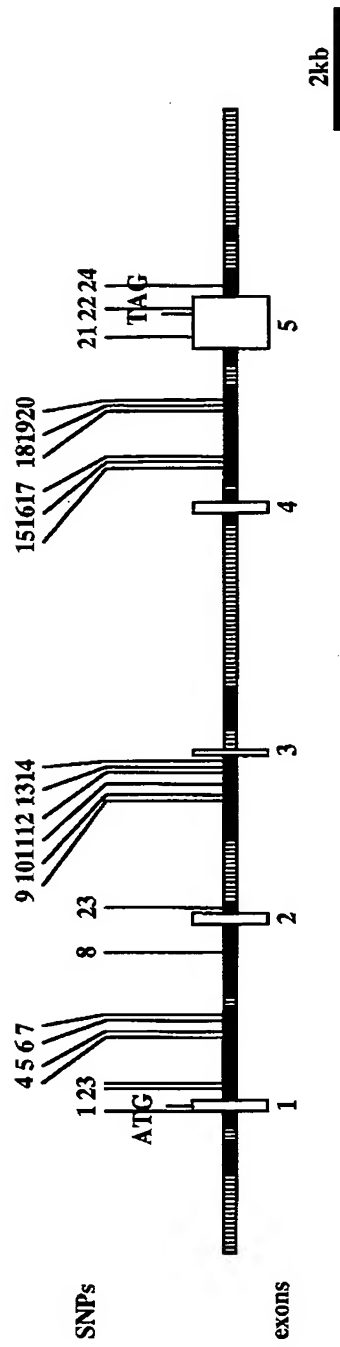




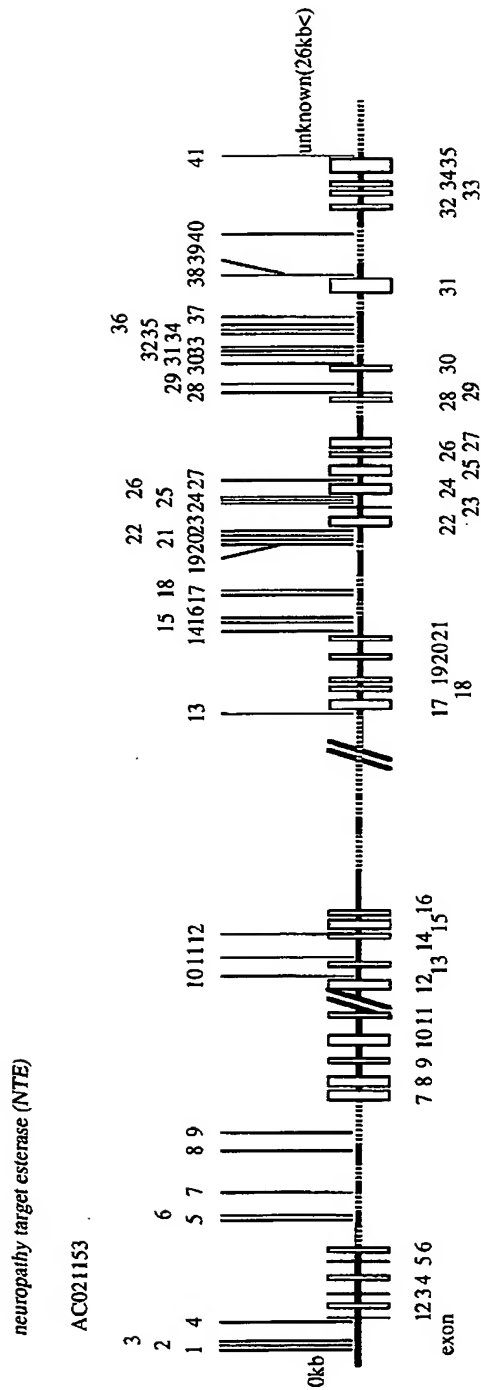
【図 93】

*Arylacetamide deacetylase (AADAC)*

ACCESSION AC068647



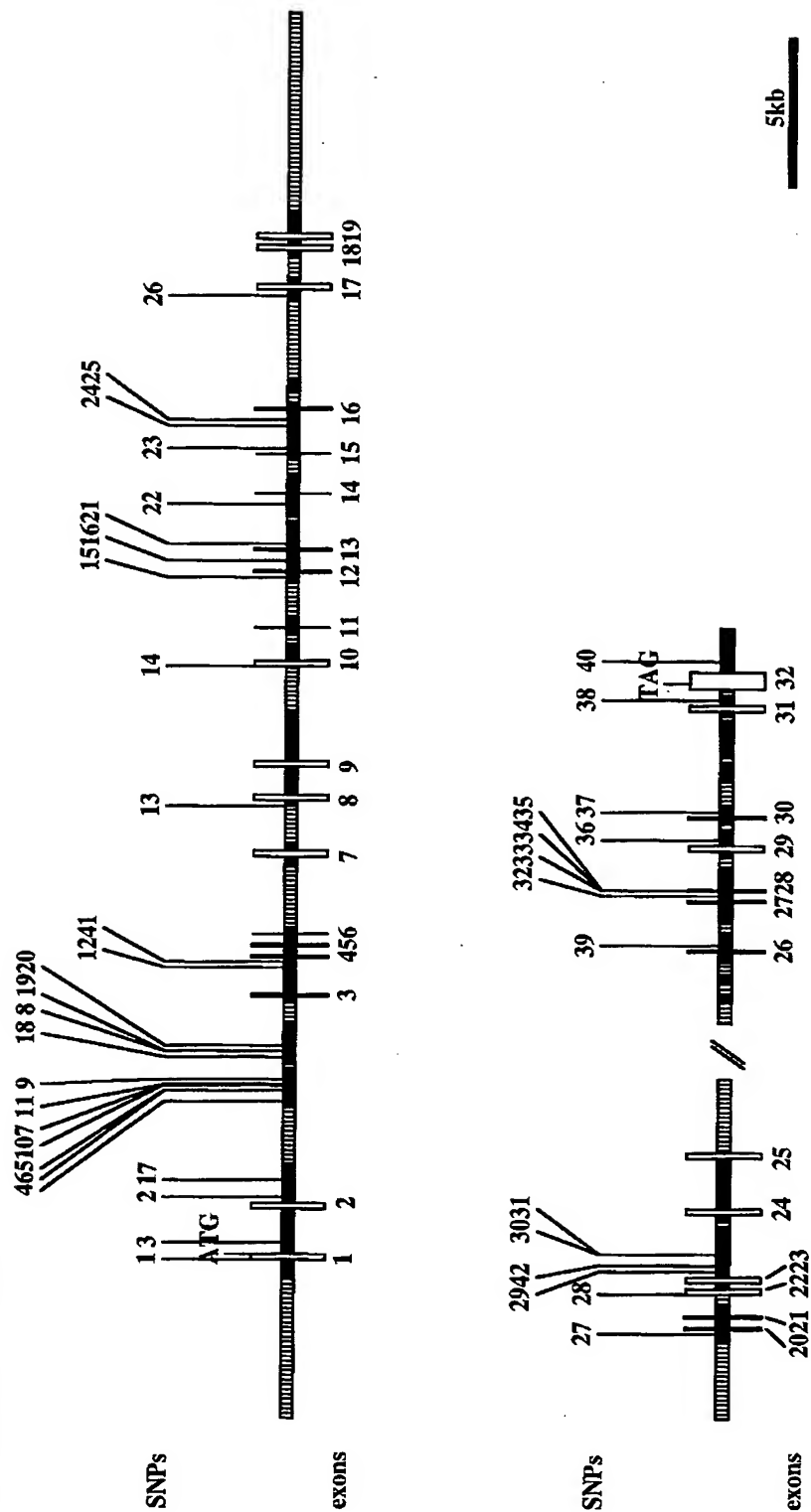
【図 9 4】



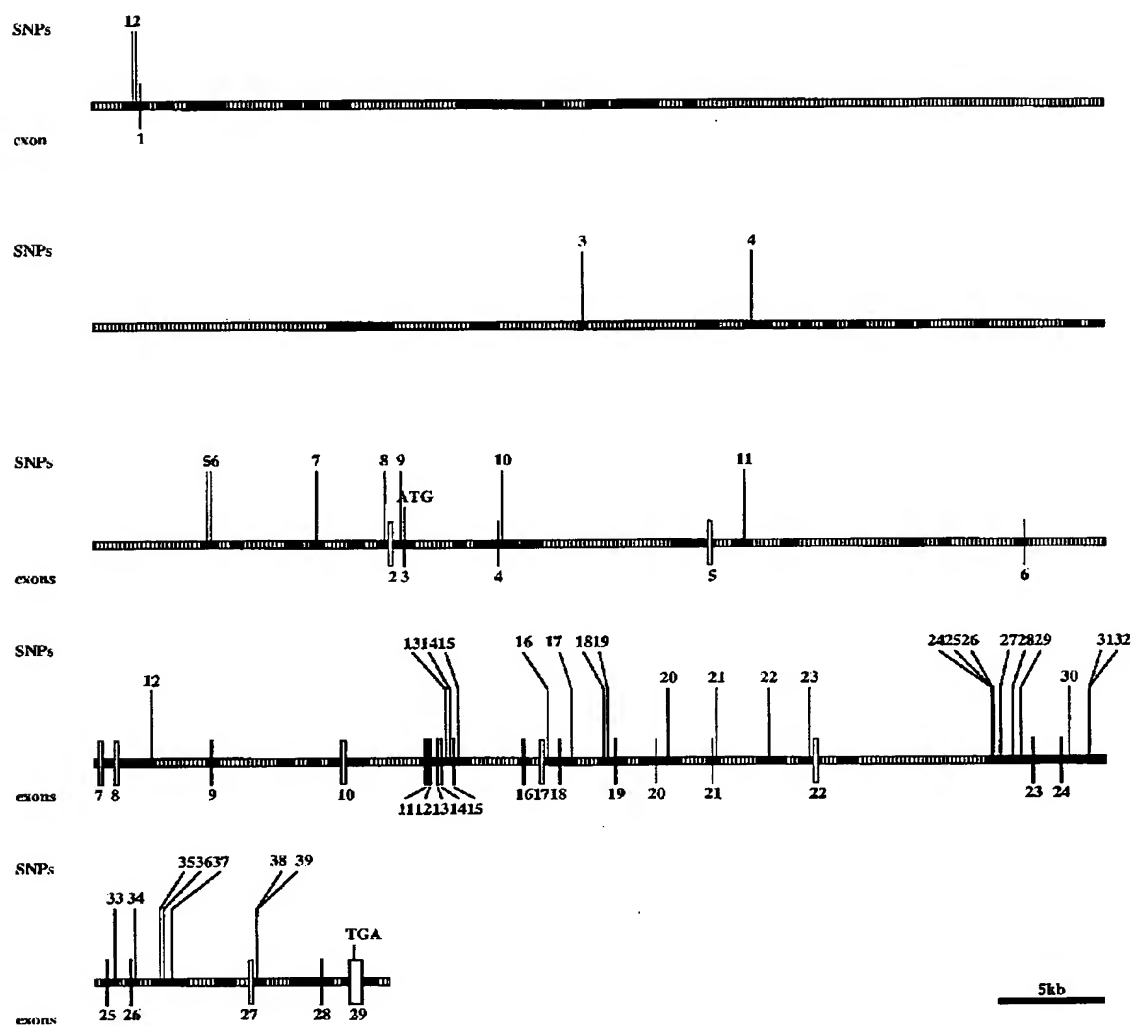
【図 95】

ATP-binding cassette, sub-family C (CFTR/MRP), member2 (MRP2)

ACCESSION AL392107



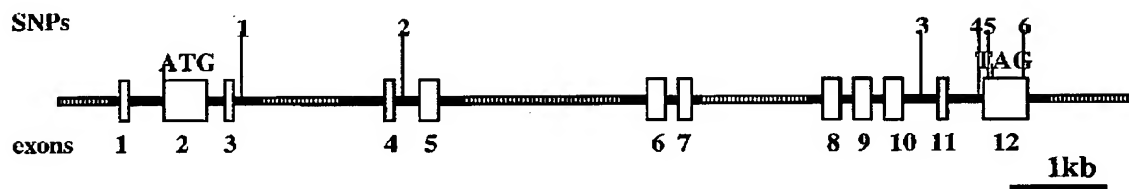
【図 96】

*ATP-binding cassette, sub-family B, member1 (ABCB1)*ACCESSION AC002457  
AC005068

【図 9 7】

***ATP-binding cassette, sub-family B, member 3 (ABCB3)***

ACCESSION X66401

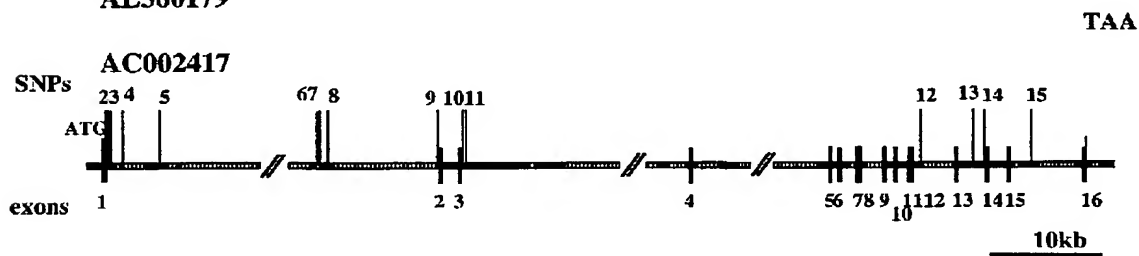


【図 9 8】

***ATP-binding cassette, sub-family B, member 7 (ABCB7)***

ACCESSION

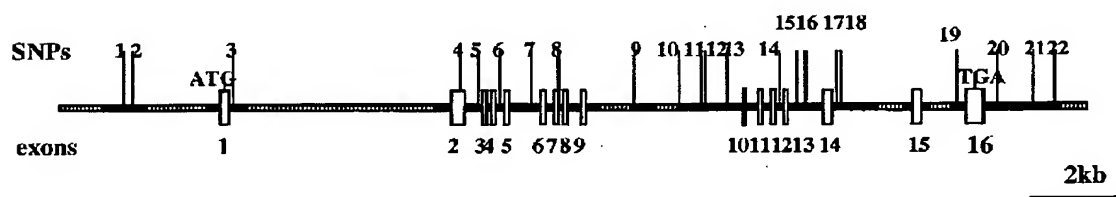
AL360179



【図 9 9】

***ATP-binding cassette, sub-family B, member 8 (ABCB8)***

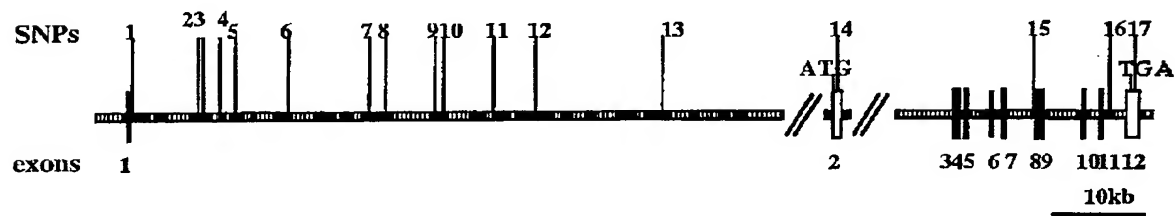
ACCESSION AC010973



【図 100】

*ATP binding cassette, sub-family B, member 9 (ABCB9)*

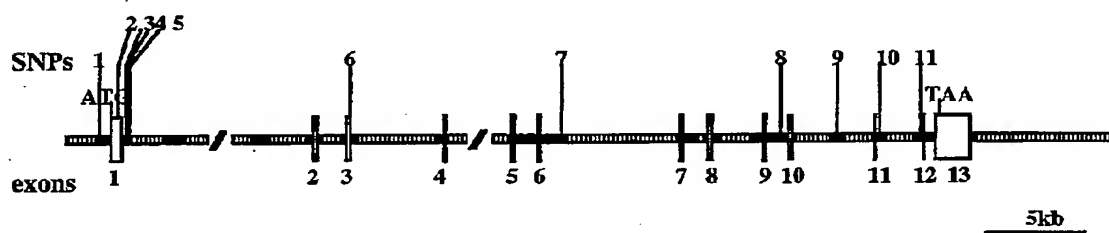
ACCESSION AC026362



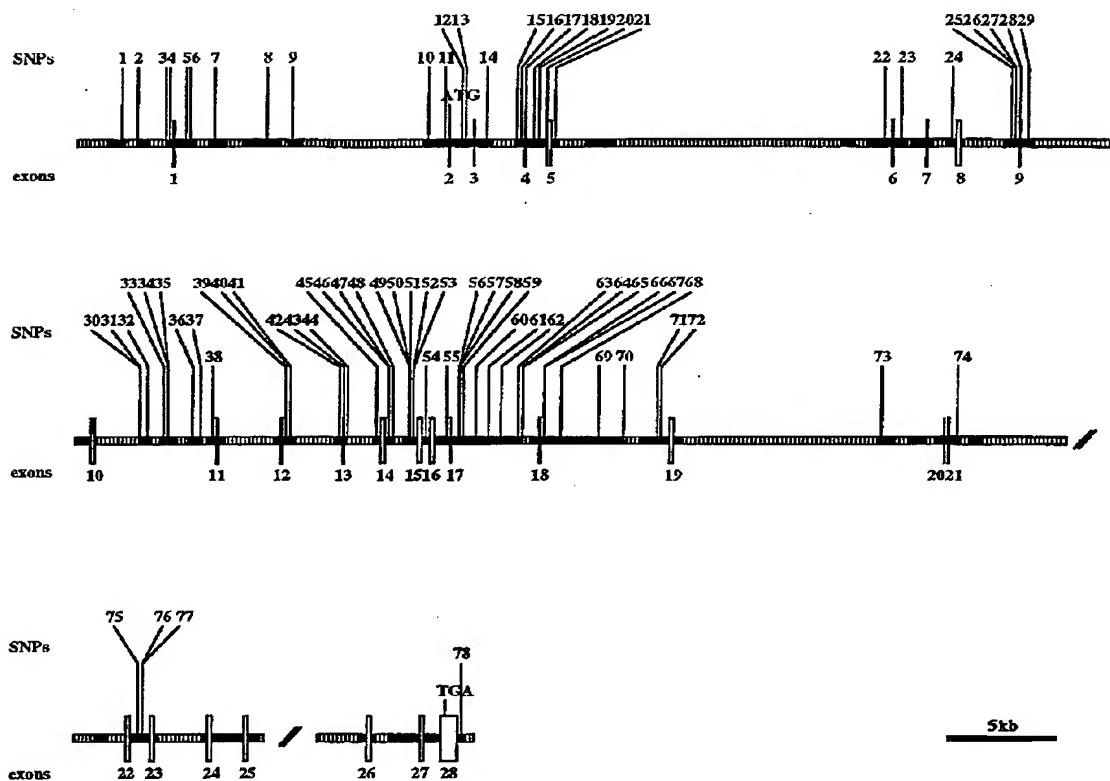
【図 101】

*ATP binding cassette, sub-family B, member 10 (ABCB10)*

ACCESSION AL121990



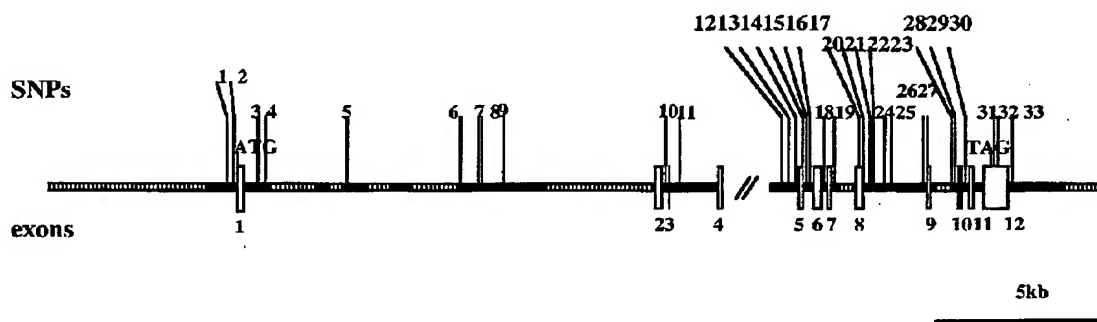
【図 102】

*ATP-binding cassette, sub-family B, member 11 (ABCB11)*ACCESSION AC008177  
AC069137

【図 103】

*Cytochrome P450, subfamily IVB, polypeptide 1 (CYP4B1)*

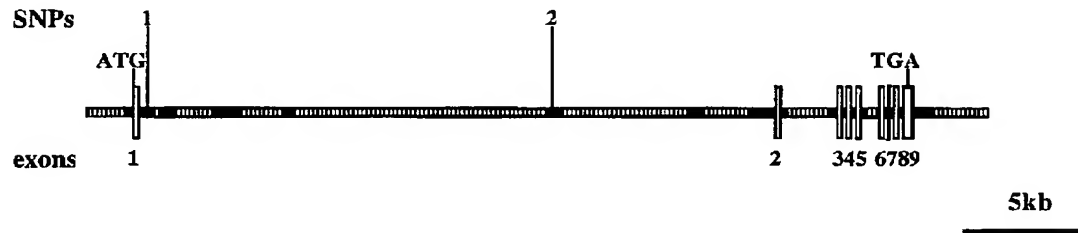
ACCESSION AL356793



【図 104】

*Cytochrome P450, subfamily XXVIIA, polypeptide 1 (CYP27A1)*

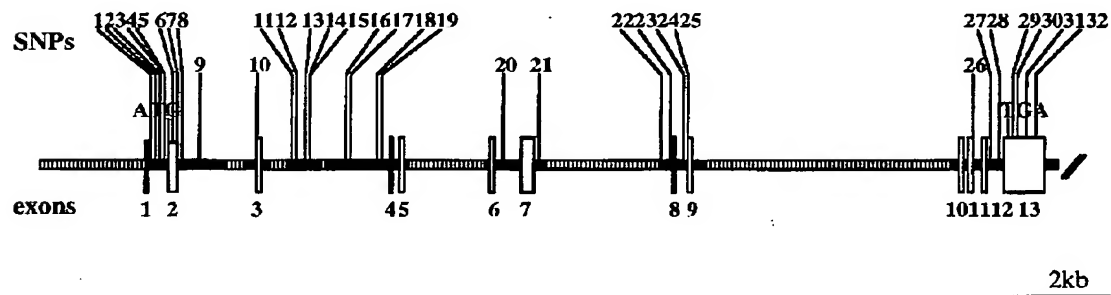
ACCESSION AC009974



【図 105】

*Cytochrome P450, subfamily IVF, polypeptide 2 (CYP4F2)*

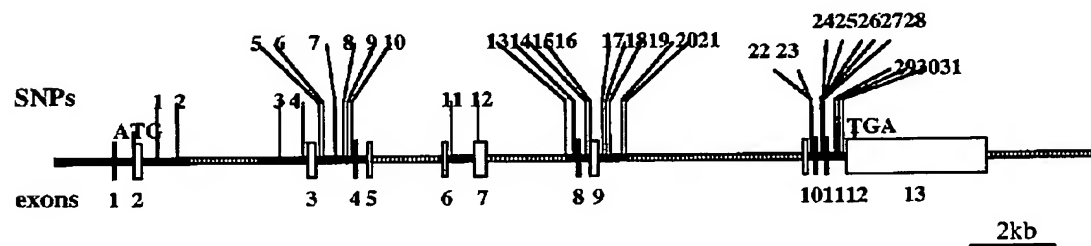
ACCESSION AC005336



【図 106】

*Cytochrome P450, subfamily 4F, polypeptide 3 (CYP4F3)*

ACCESSION AD000685

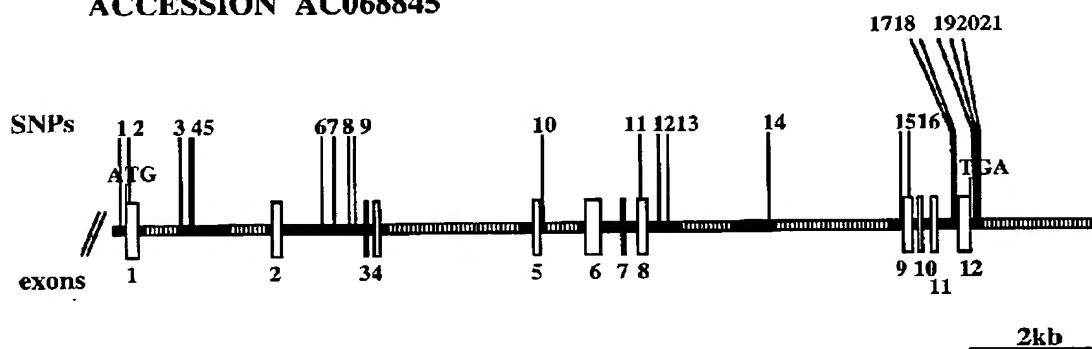




【図 107】

*Cytochrome P450, subfamily 4F, polypeptide 8 (CYP4F8)*

ACCESSION AC068845



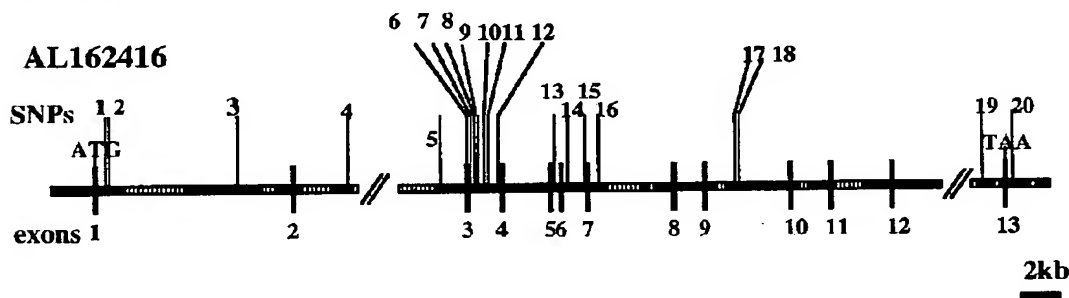
【図 108】

*Aldehyde dehydrogenase 1 (ALDH1)*

ACCESSION

AC009284

AL162416

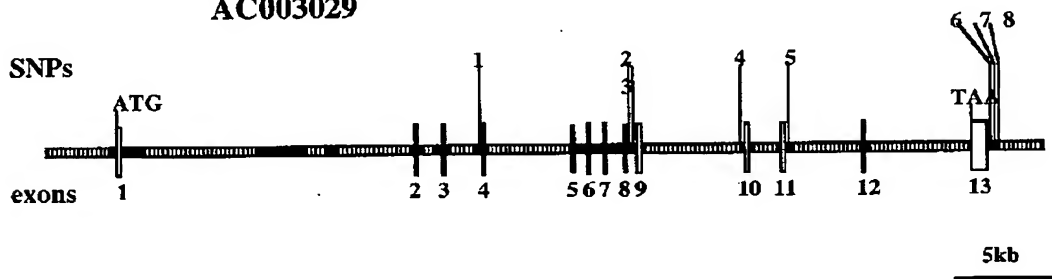


【図 109】

*Aldehyde dehydrogenase 2 (ALDH2)*

ACCESSION AC002996

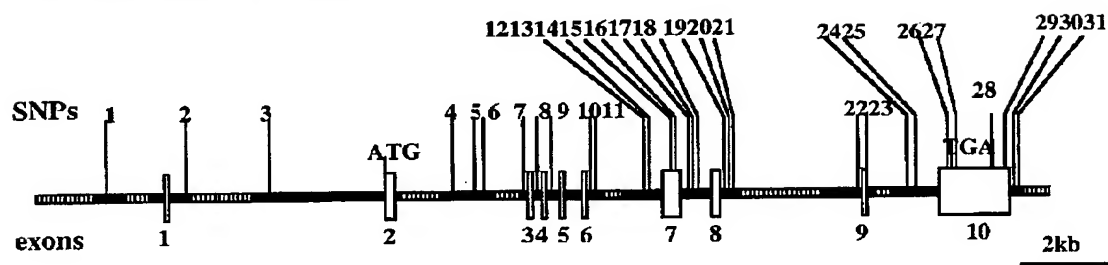
AC003029



【図 110】

*Aldehyde dehydrogenase 7 (ALDH7)*

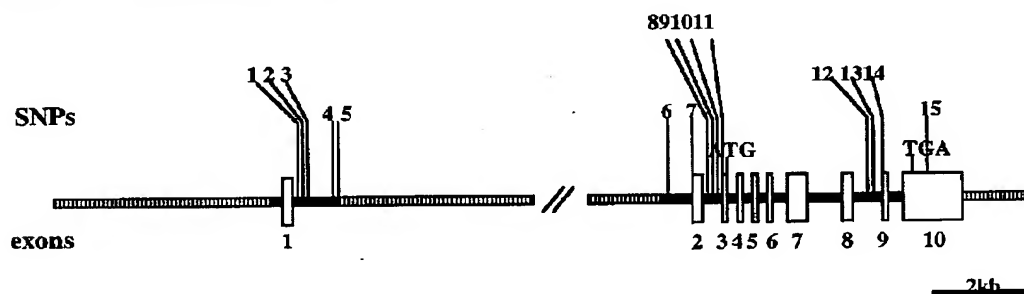
ACCESSION AC004923



【図 111】

*Aldehyde dehydrogenase 8 (ALDH8)*

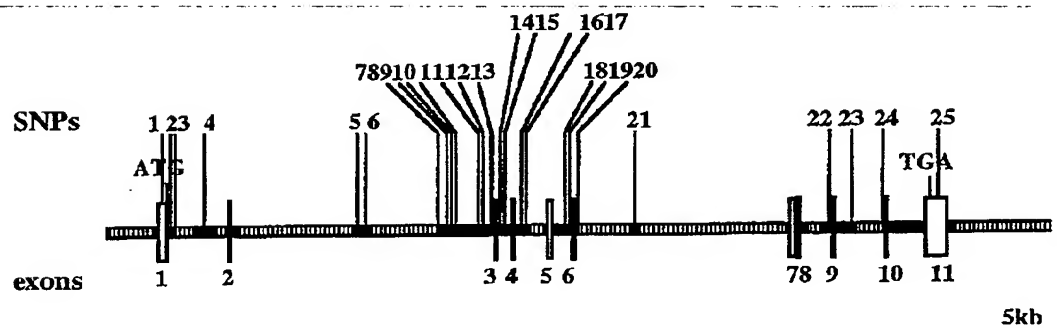
ACCESSION AC021987



【図 112】

*Aldehyde dehydrogenase 9 (ALDH9)*

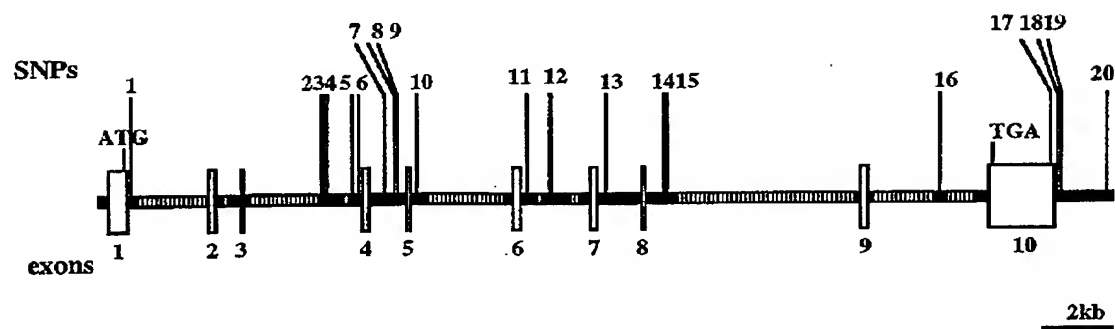
ACCESSION AL451074



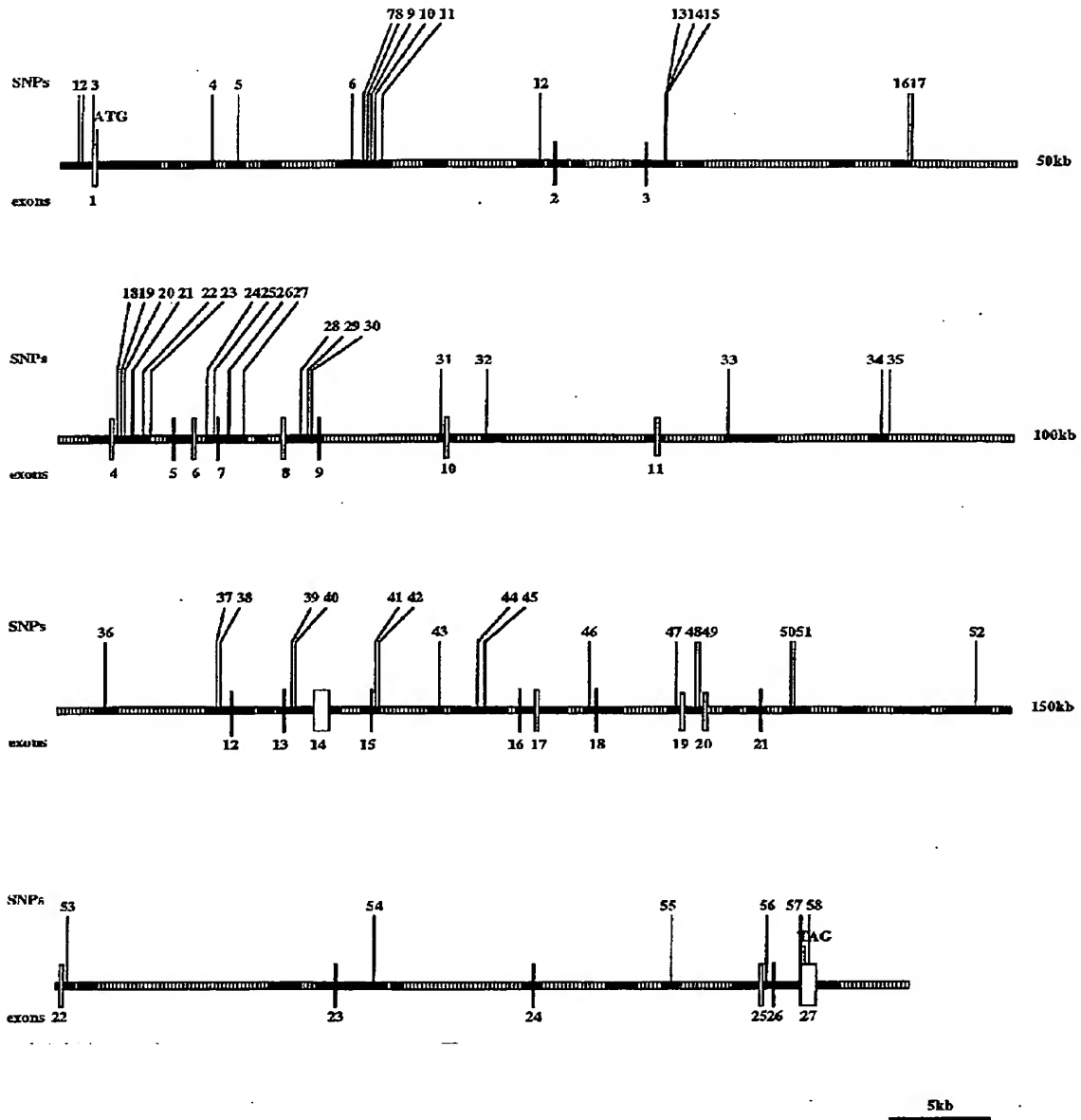
【図 113】

*Aldehyde dehydrogenase 10 (ALDH10)*

ACCESSION AC005722



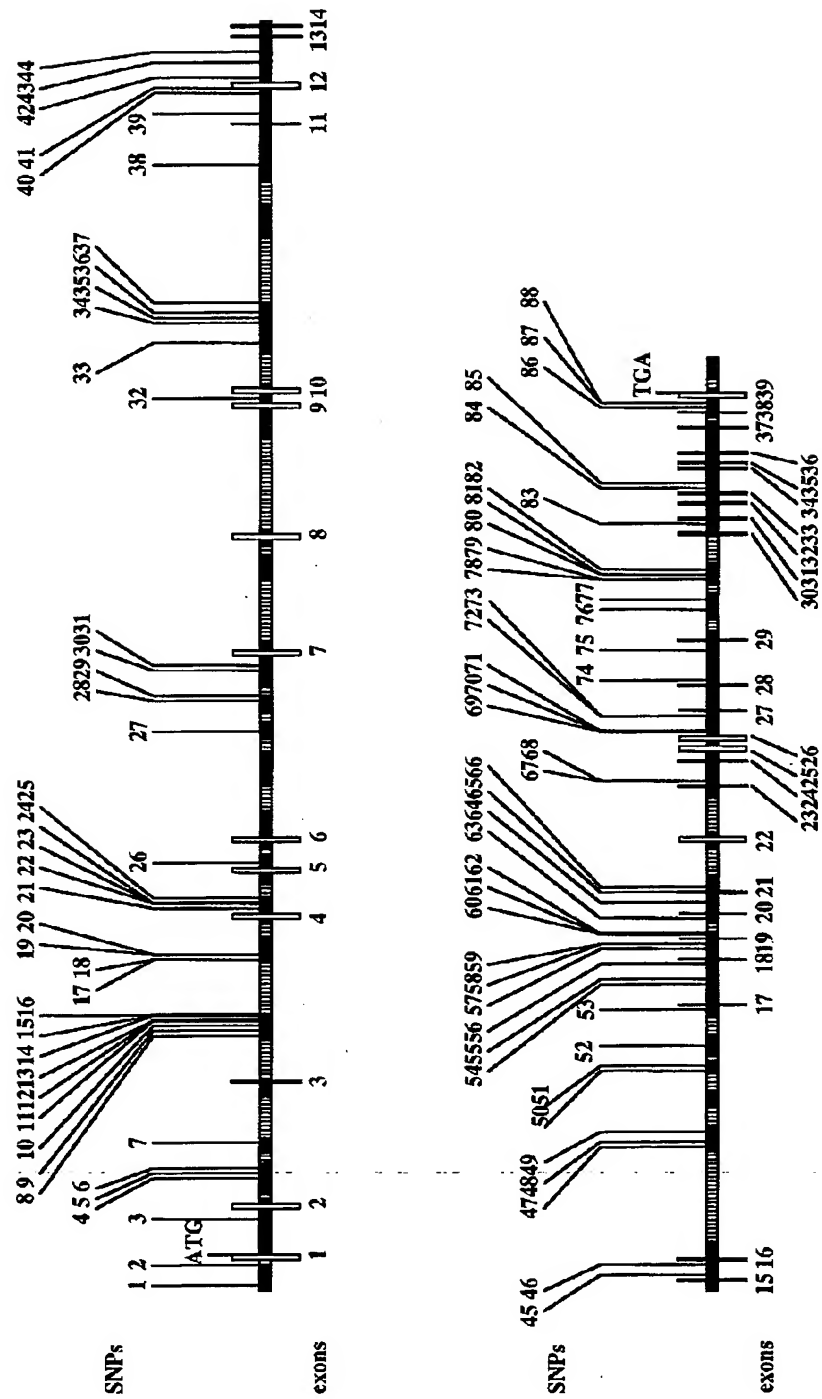
【図114】

*ATP binding cassette, sub-family C, member 7 (ABCC7)*ACCESSION AC000111  
AC000061

【図 115】

*ATP binding cassette, sub-family C, member 8 (ABCC8)*

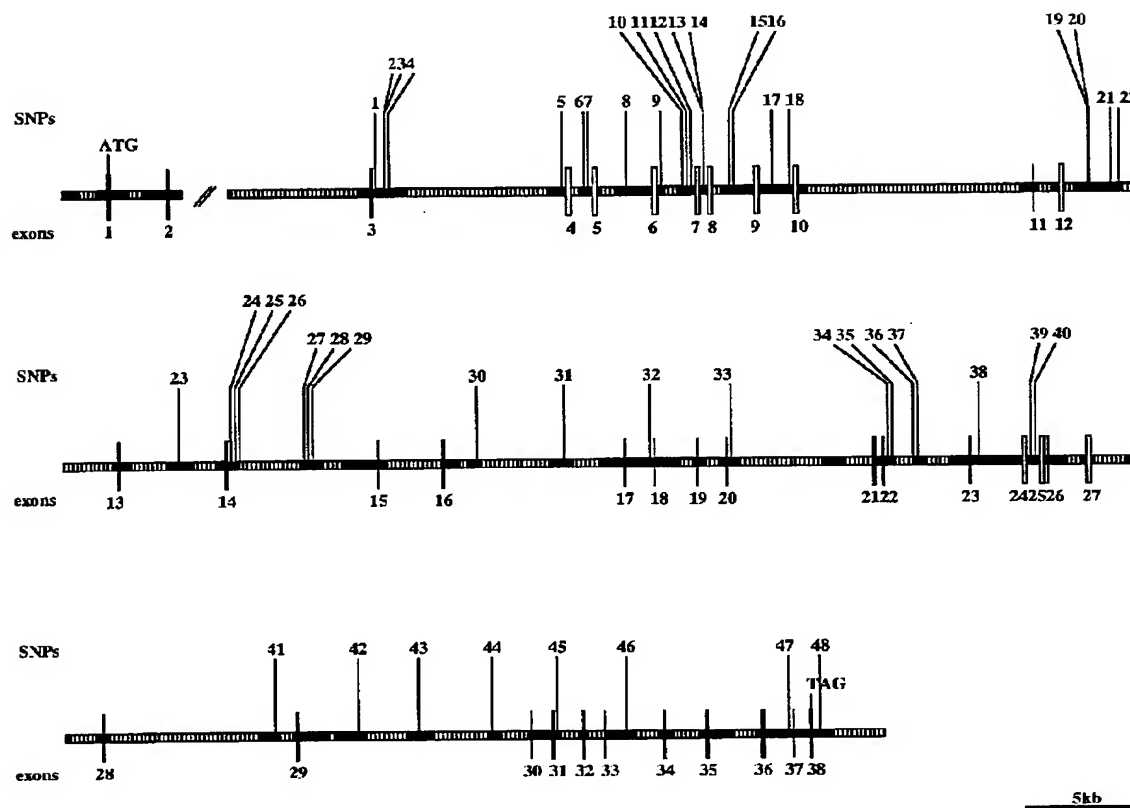
ACCESSION AC000406



【図 116】

*ATP binding cassette, sub-family C, member 9 (ABCC9)*

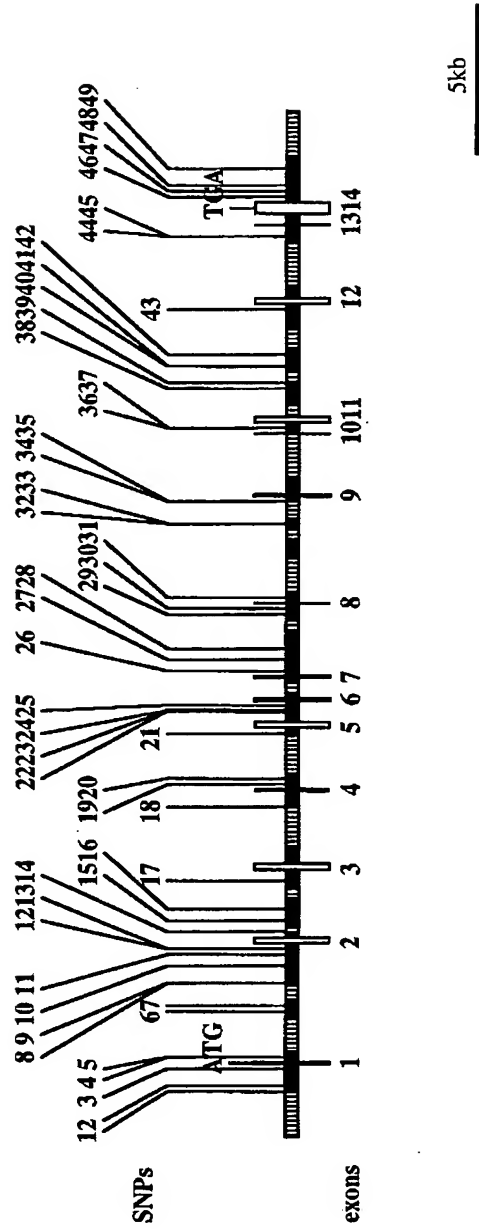
ACCESSION AC084806  
AC008250

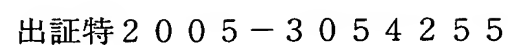


【図 117】

*Carboxylesterase 1 (CES1)*

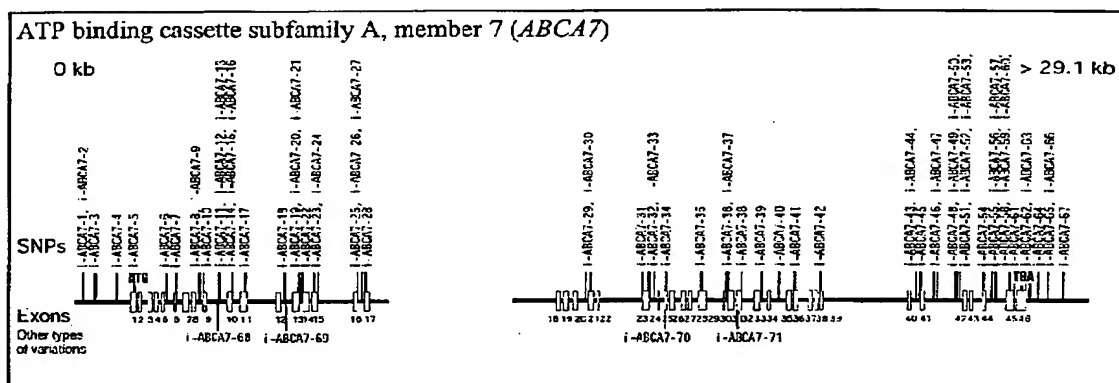
ACCESSION AC007602



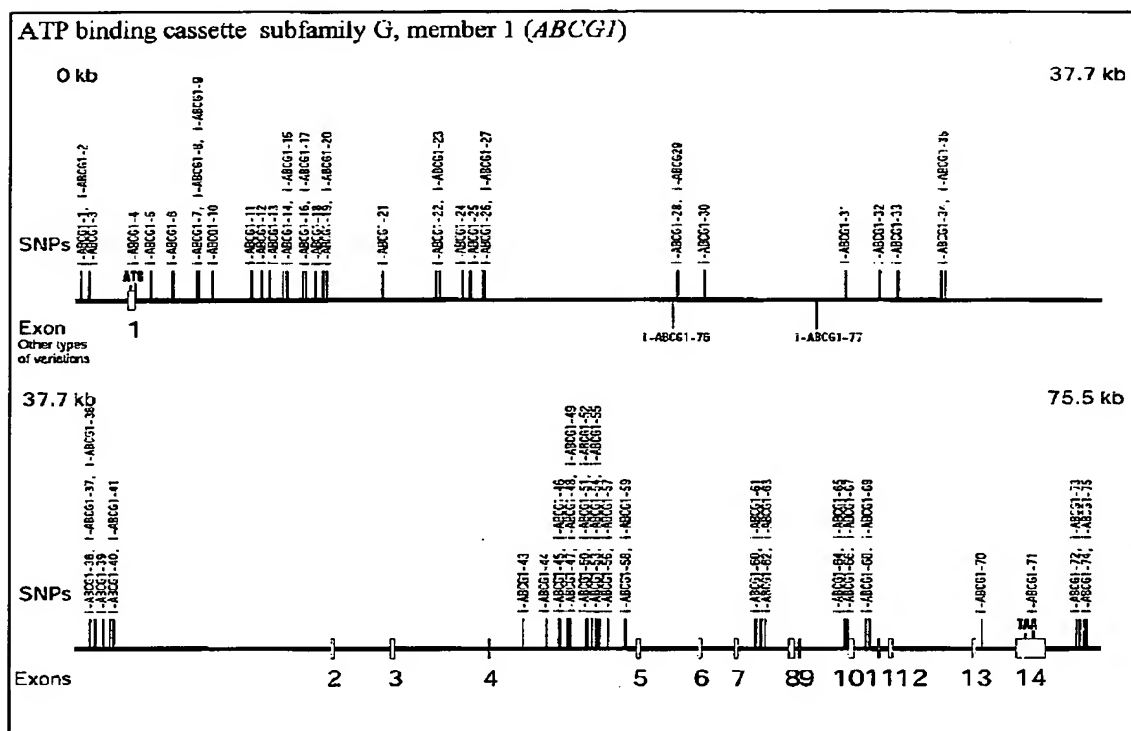
ATP binding cassette, subfamily A, member 4 (*ABCA4*)



【図 119】

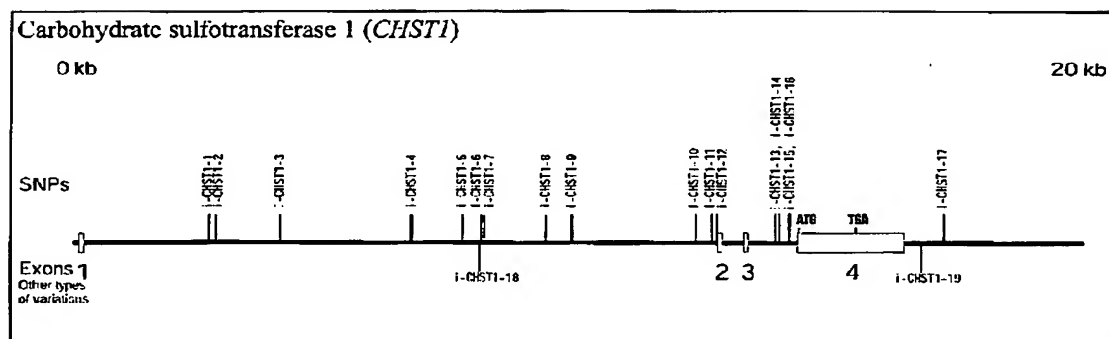


【図 120】

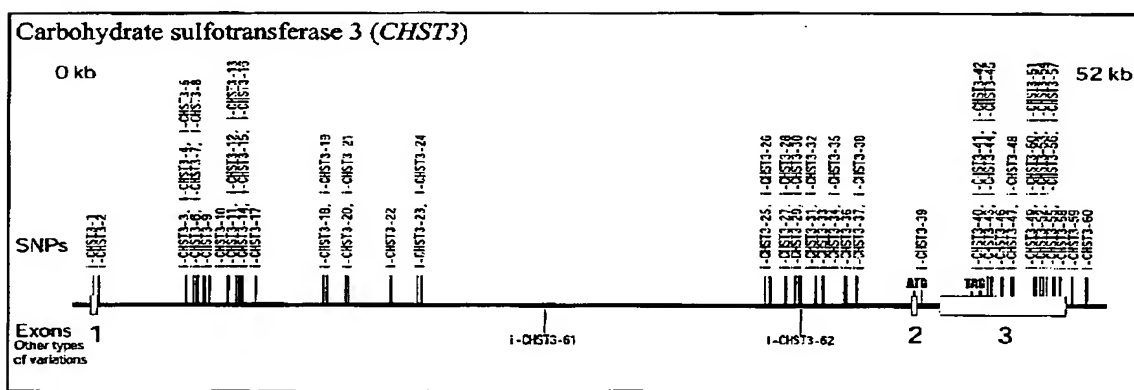




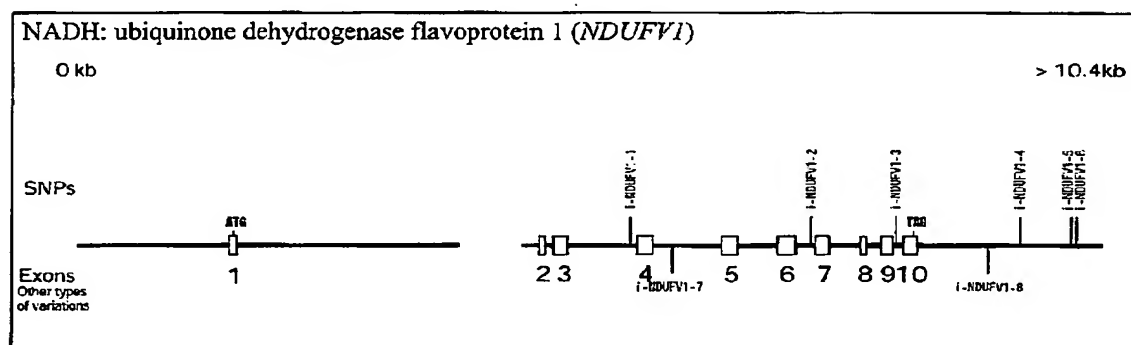
【図 1 2 4】



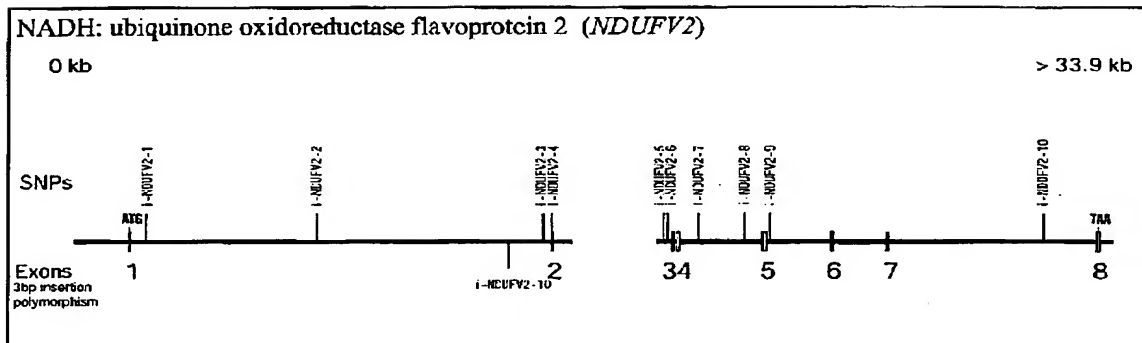
【図 1 2 5】



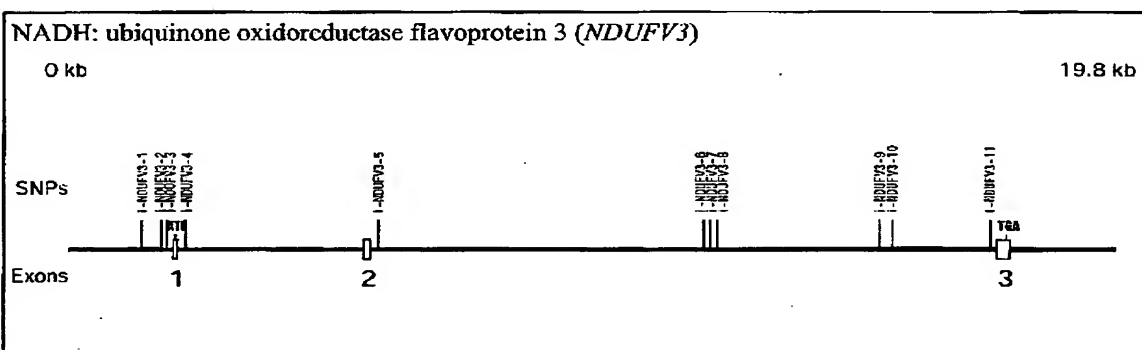
【図 1 2 6】



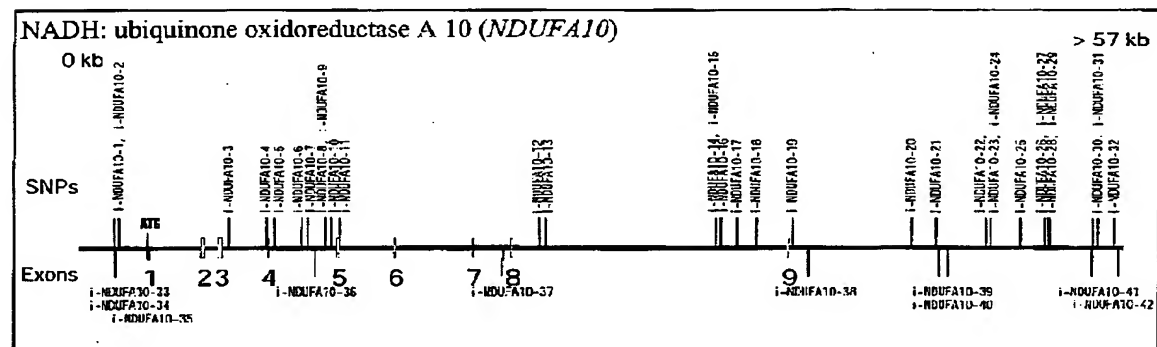
【図 127】



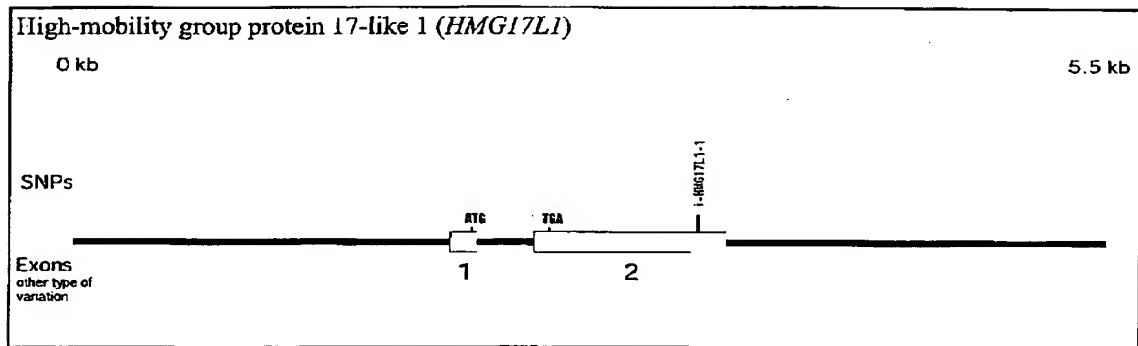
【図 128】



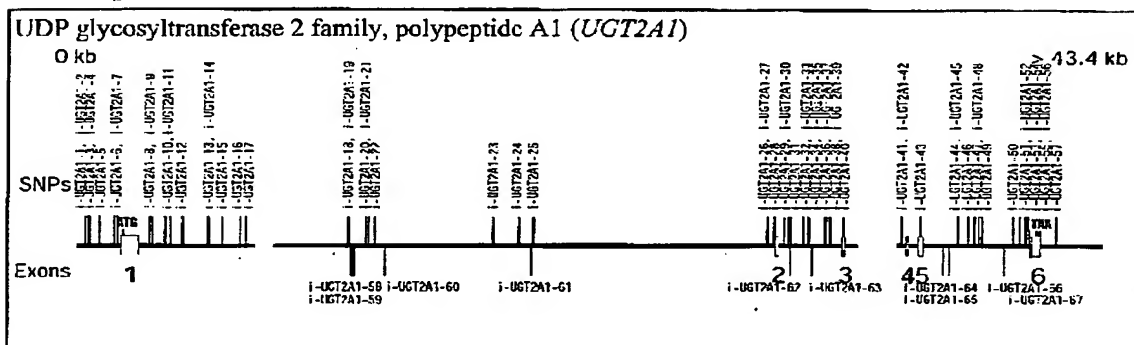
【図 129】



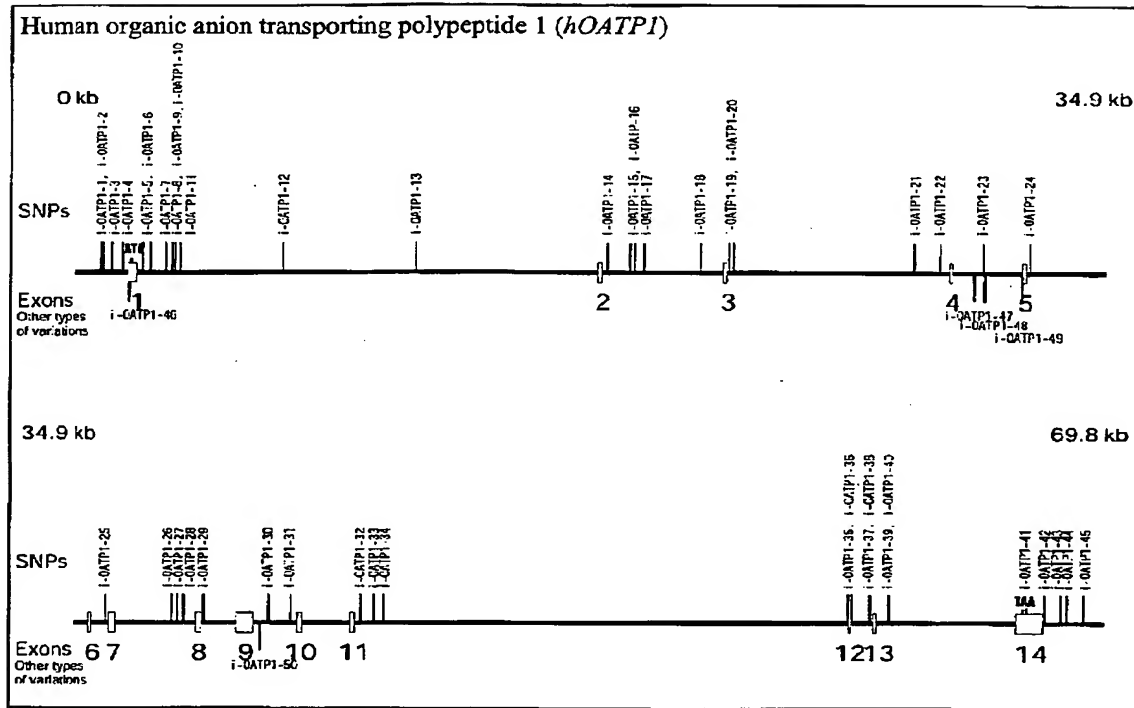
【図 130】



【図 131】

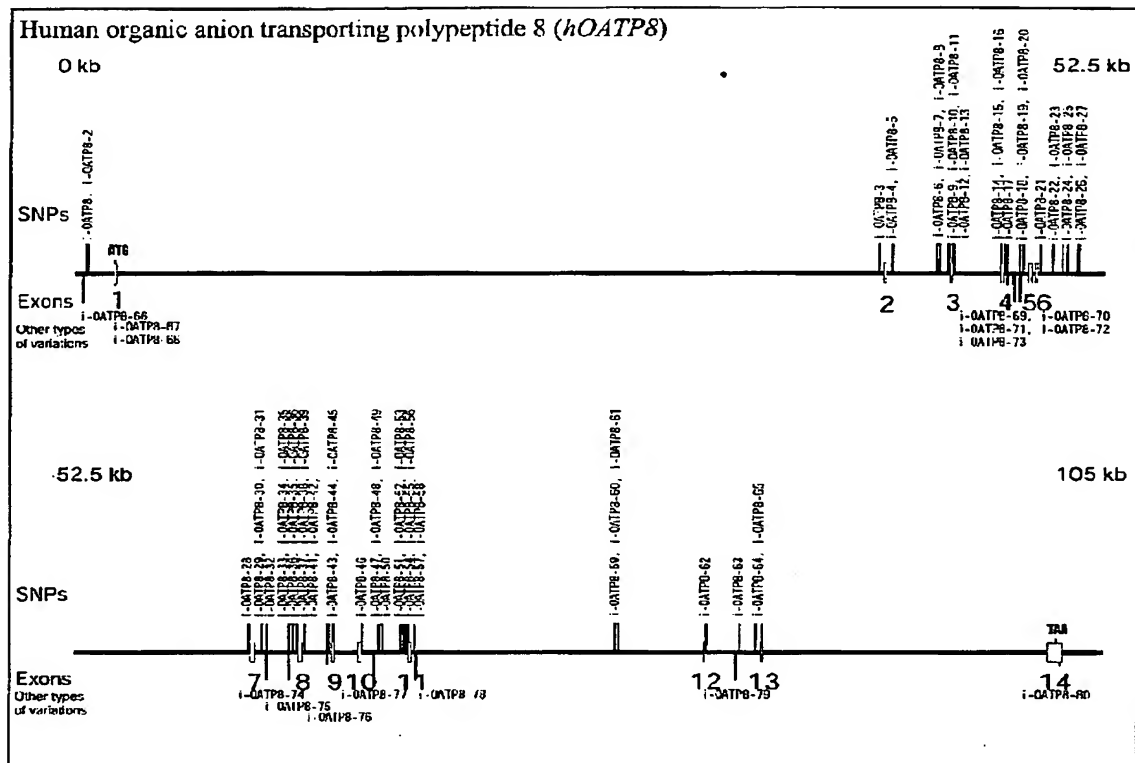


【図 132】



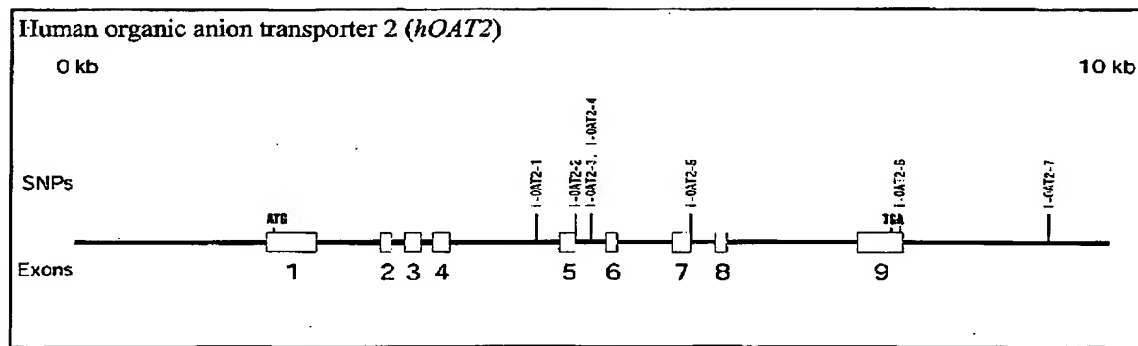


【图 134】

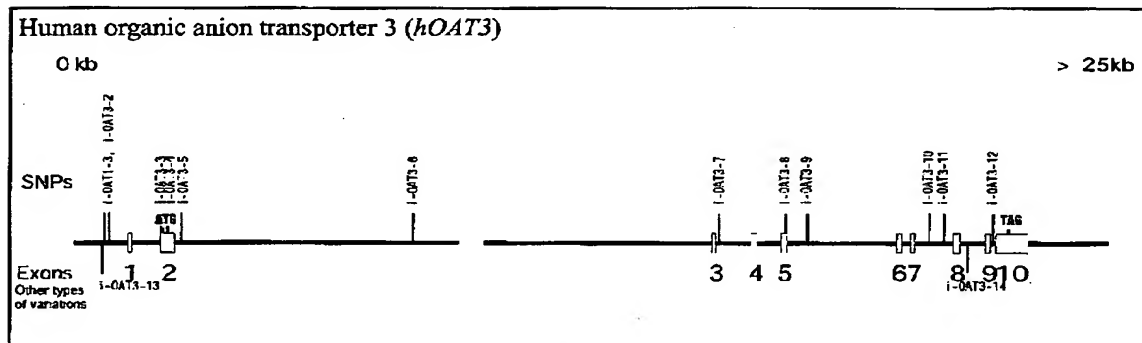




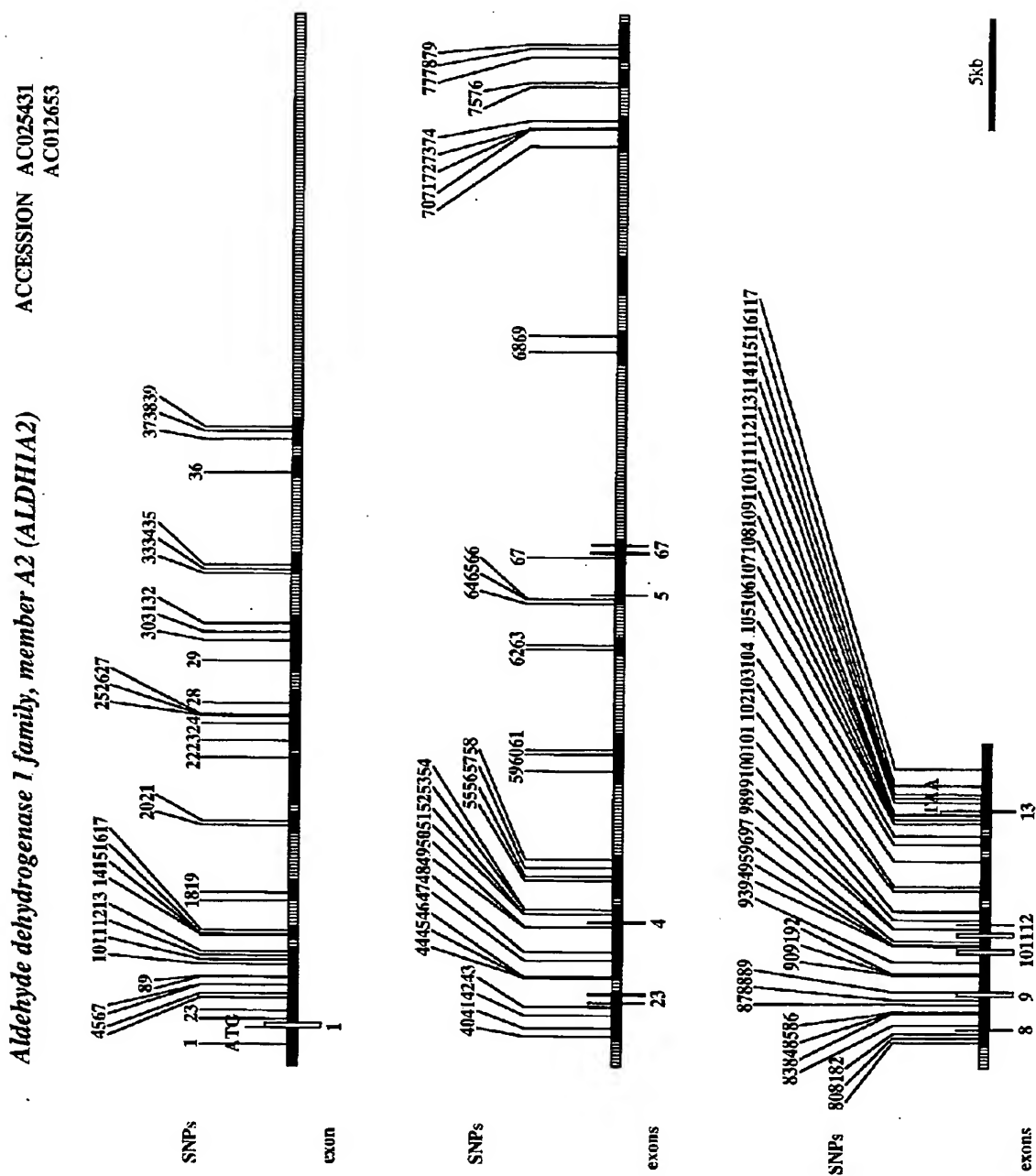
【図 136】



【図 137】



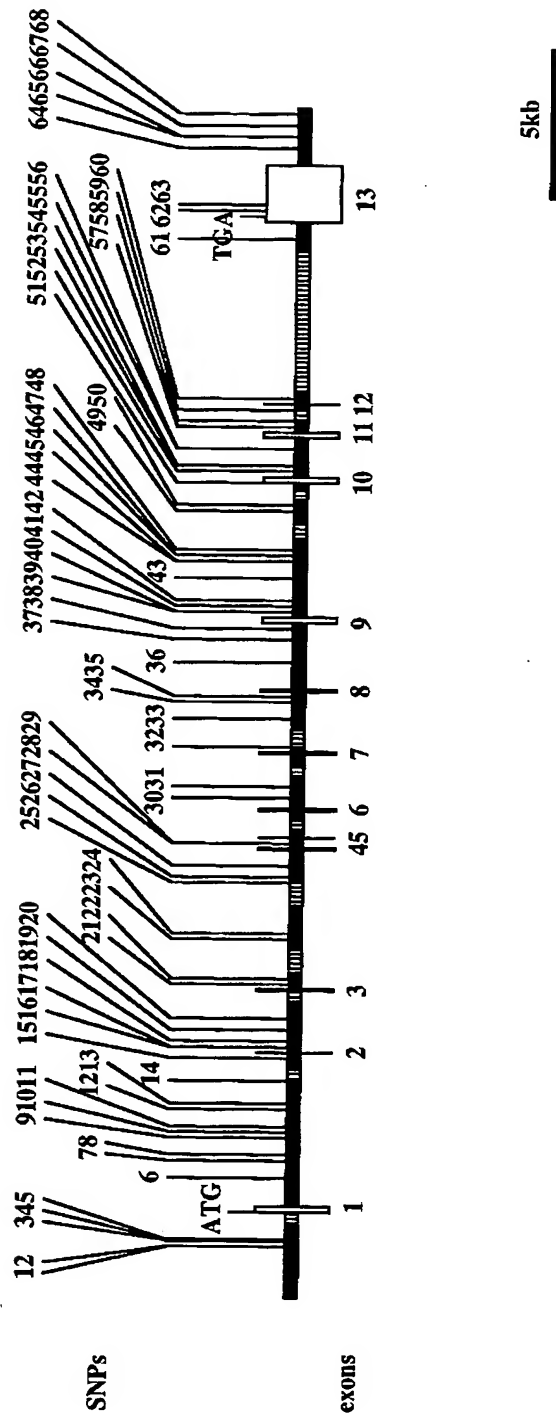
【図 138】



【図 139】

*Aldehyde dehydrogenase 1 family, member A3 (ALDH1A3)*

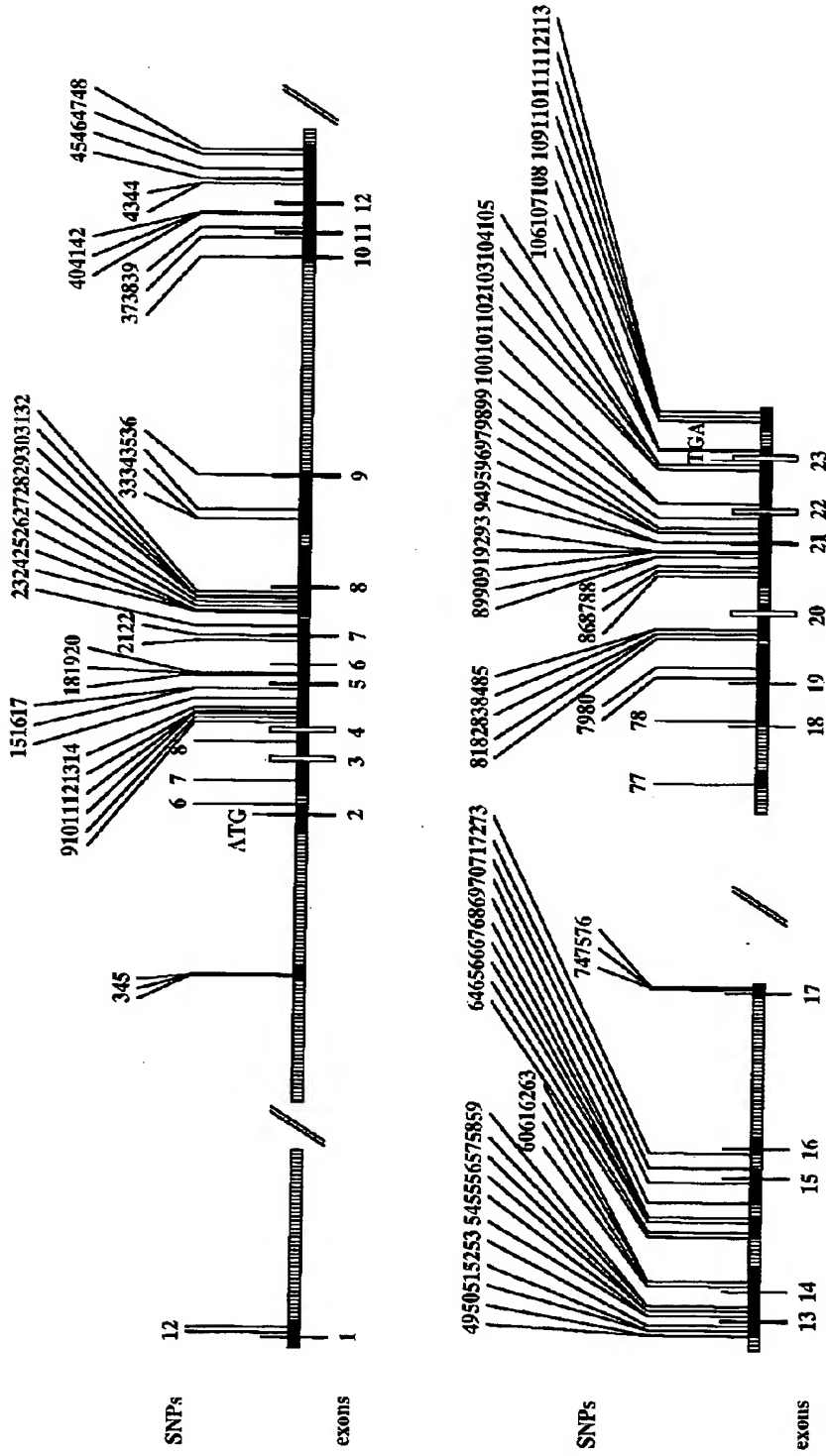
ACCESSION AC015712



【図 140】

Formyltetrahydrofolate dehydrogenase (FTHFD /ALDH1L1)

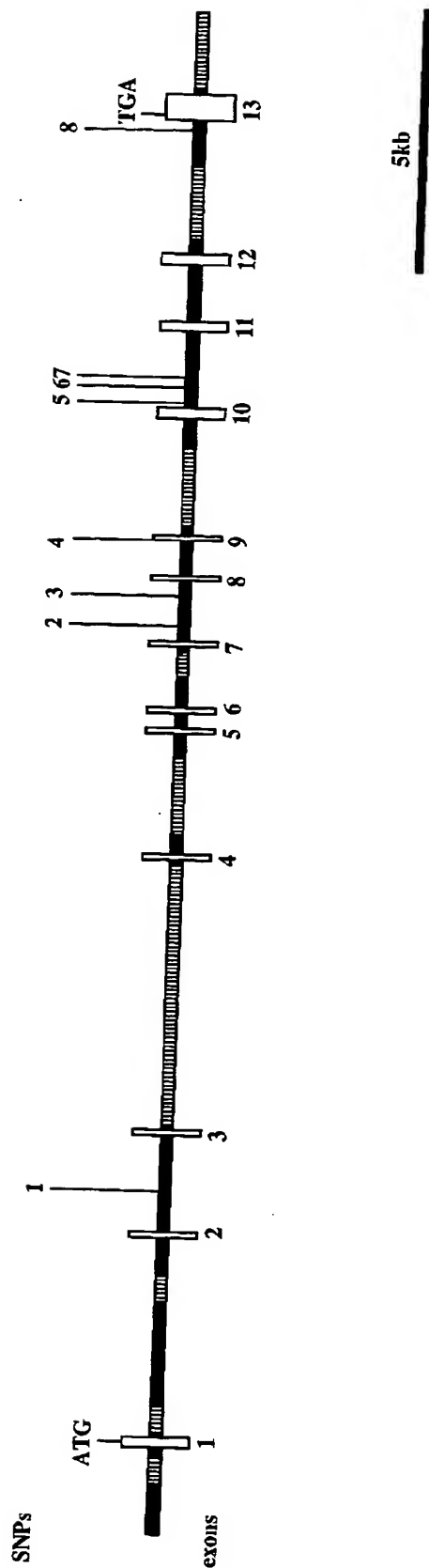
ACCESSION AC079848



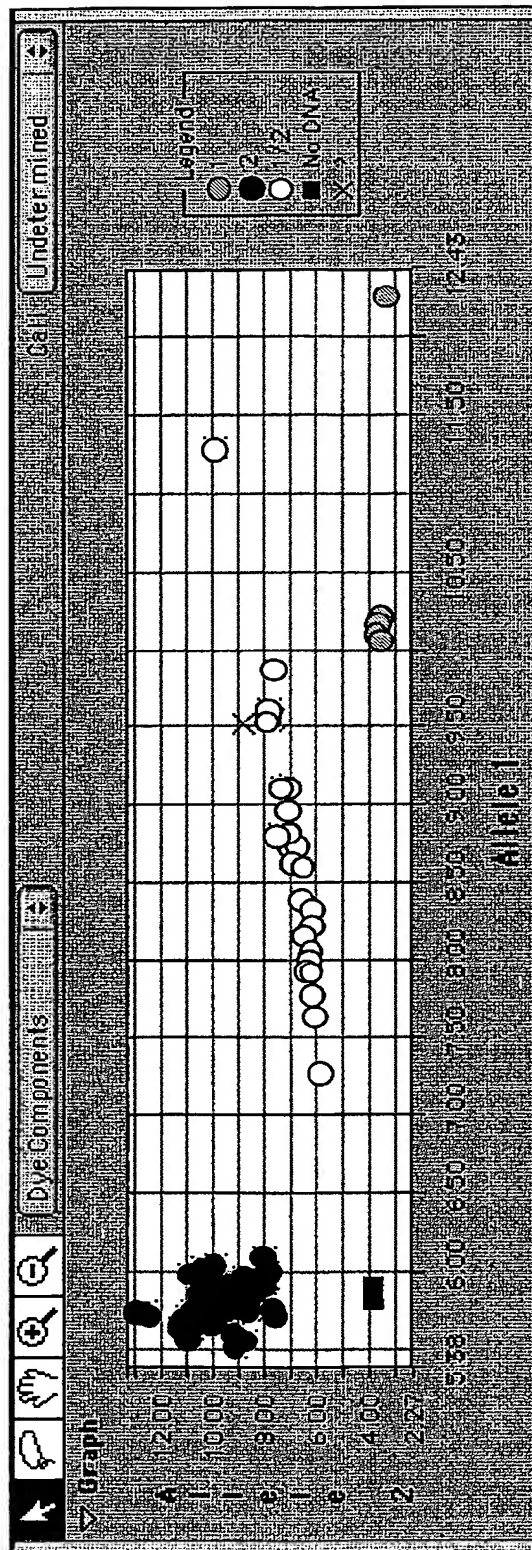
【図 141】

*Cytochrome P450, subfamily IIIA, polypeptide 4 (CYP3A4)*

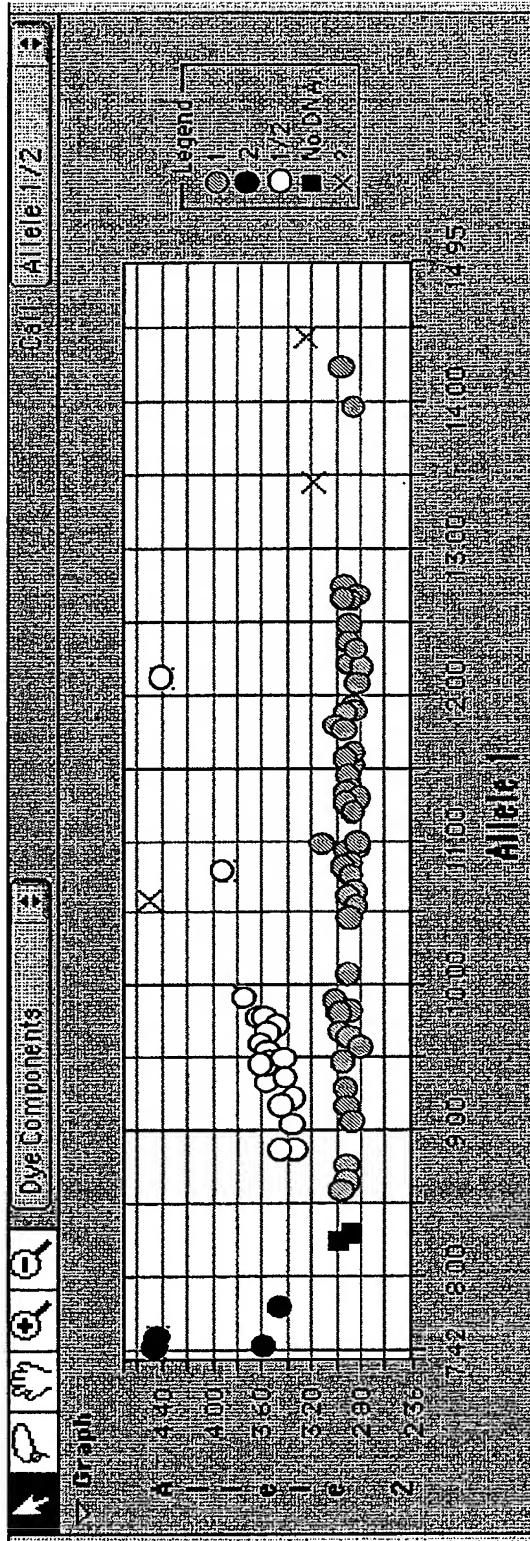
ACCESSION AF280107



【図 142】



A



B

【書類名】 要約書

【要約】

【課題】 遺伝子多型の検出方法の提供。

【解決手段】 薬物代謝酵素をコードする遺伝子中に存在する遺伝子多型情報から、該遺伝子多型部位を含むように、又は薬物代謝酵素をコードする遺伝子を増幅したときの増幅断片中に前記遺伝子多型部位が含まれるように、オリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを作製し、得られるオリゴヌクレオチドプローブ及び/又はオリゴヌクレオチドプライマーを用いて、目的の薬物代謝酵素をコードする遺伝子中の少なくとも1個の遺伝子多型を検出することを特徴とする遺伝子多型の検出方法。

【選択図】 なし

特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号 [ 0 0 0 0 0 6 7 9 2 ]

1. 変更年月日	1 9 9 0 年 8 月 2 8 日
[変更理由]	新規登録
住 所	埼玉県和光市広沢 2 番 1 号
氏 名	理化学研究所



特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号 [ 5 0 0 0 5 6 7 5 8 ]

1. 変更年月日 2 0 0 2 年 9 月 9 日  
[変更理由] 識別番号の二重登録による抹消  
[統合先識別番号] 5 9 8 0 3 9 6 5 5  
住 所 神奈川県横浜市青葉区あざみ野 1 - 1 7 - 3 3  
氏 名 中村 祐輔

特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号 [ 5 9 8 0 3 9 6 5 5 ]

1. 変更年月日 2 0 0 2 年 9 月 9 日
- [変更理由] 識別番号の二重登録による統合
- [統合元識別番号] 5 0 0 0 5 6 7 5 8
- 住 所 神奈川県横浜市青葉区あざみ野 1 丁目 1 7 番 3 3 号
- 氏 名 中村 祐輔

特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号

[ 5 0 1 0 0 2 4 7 1 ]

1. 変更年月日

2 0 0 0 年 1 2 月 2 7 日

[変更理由]

新規登録

住 所

東京都国立市北 1 - 1 1 - 8

氏 名

関根 章博

特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号 [ 5 0 1 0 0 2 4 8 2 ]

1. 変更年月日	2 0 0 0 年 1 2 月 2 7 日
[変更理由]	新規登録
住 所	神奈川県川崎市中原区田尻町 2 1
氏 名	飯田 有俊

特願 2 0 0 1 - 2 5 6 8 6 2

出 願 人 履 歴 情 報

識別番号

[ 5 0 1 0 0 2 4 9 3 ]

1. 変更年月日

2 0 0 0 年 1 2 月 2 7 日

[変更理由]

新規登録

住 所

東京都青梅市東青梅 5 - 1 0 - 6 河辺パークホームズ 1 0 8

氏 名

斎藤 督